The Chemical Age

A Weekly Journal Devoted to Industrial & Engineering Chemistry

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NOTICES:—All communications relating to editorial matter should be addressed to the Editor who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Other communications relating to advertisements or general matters should be addressed to the Manager.

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Looking Forward

THE leading note in all the speeches at the opening this week of the British Science and Key Industries Exhibition at Glasgow was the emphasis laid on the necessity for considering the future rather than the past. This is especially true of what are known as our "key" industries, of which the chemical industry is one of the most vital. The sense of the importance of these industries became increasingly acute during the war, because with the supplies, for which we had so complacently depended on foreign producers, cut off, we had simply to provide for our own needs out of our own resources or go without. Under the stimulation of the fear of starvation or defeat we performed some miracles of rapid organisation. Now that that stimulus no longer serves as a whip, there is some danger of a partial return to the indolent and, as the war demonstrated, extremely risky policy of taking ready-made supplies from foreign sources, instead of firmly exerting our energies until we are permanently self-dependent for the necessaries of existence and of industry.

In no industry does this fact need to be more persistently remembered than in the chemical industry of this country. The splendid energy with which chemists tackled the problem of providing for national needs during the war may, unless the danger is generally realised, be followed by a reaction, in the course of which the valuable gains of the war period may be largely lost. There is some temptation towards this attitude in the fact that the chemical industry of to-day is prosperous. Generally, it may be said that chemical firms are doing well; that in many cases, in fact, their order books are fuller than their store rooms; and business men in these extremely comfortable circumstances may be tempted to rest on their oars. Nothing could be more fatal to the future of chemical industry than this easy spirit of contentment with present conditions. If we are to maintain the gains of the war period, and to make them a base for permanent advance for the future, we shall need in the next five years of peace as strenuous and sustained an effort as we made during the five years of war. And we shall need it in every branch—research, technical education, works organisation, the modernisation and improvement of plant, the perfection of our export methods, the more scientific use of men and machines for large and economical production, and, not least of all, more systematic attention to the science of sale, distribution, and advertisement.

Our trade representatives abroad repeatedly draw attention to the larger and more skilful use which foreign competitors, especially American and German, make of publicity. We are apt to rely a little too exclusively on the intrinsic merit of British goods to secure business. It is a testimony to this intrinsic merit that they hold the place they do in the markets of the world. But it is unfair to the best goods to expect them to sell themselves. Production is one branch; sale and publicity constitute another; and progressive firms are realising more than ever the part that efficiently organised publicity plays in the development of modern business. If the chemical industry has the necessary enterprise and faith in its own future to keep up the pace for the next few years and bring the great new industries, hardly at present beyond the embryonic stage, to their full maturity, it will be able to meet fearlessly in the future the best that other nations can produce in any field. There is no hope of progress from the slow-moving minds that still live in the chemical trade of thirty years ago; the leaders required to-day are men with a vision of what British chemical industry, if rightly handled, may become thirty years hence. There is a great opportunity before the trade, but it must be realised now, and exploited to its full value. And one of the purposes of the British Key Industries Exhibition is to bring that plain business truth home not only to the chemical but to every national industry.

A Merchants' Association

THE attention which has recently been given in New York to the British Chemical Trade Association's standardised sales contract and terms of arbitration will probably raise again the question how far the Association at present represents British chemical merchants. Frankly, we believe, the Association does not claim to be completely representative in the sense that its membership at present includes the whole body of chemical merchants. But, founded in 1915, to meet the need of some organisation for negotiating with the Government, it has already performed some extremely useful work, and its membership is quietly on the increase. Being directly represented on the advisory committee of the Department of Import Restrictions it has been able to render good service to many British firms, and the correspondence in the possession of the Association shows that such service is widely appreciated. In many cases, in fact, grievances have been rectified by the action of the Association which individual merchants would have been powerless to rectify for themselves, owing to the fact that the Government's policy in such matters is to deal with constituted bodies. Apart from the standardised sales contract, which is attracting so much notice in America, another matter of great interest which the Association has under consideration is the establishment of an international system, somewhat on the lines of Lloyd's, whereby any member desiring reliable and independent services in any foreign country where he may have no branch office or agency of his own, such as the inspection of goods before shipment or the surveying of disputed parcels, may readily obtain such facilities through the Association. Such an organisation will require funds, but it is an example of the kind of thing that might be done for the chemical trade if only the whole resources of the industry were organised for such purposes.

We refer to this matter because suggestions have been made to us by some large firms in the trade as to the possibility of enlarging the membership and constitution of the Association so as to give it a fully representative character. We believe the founders of the Association would welcome any such movement. Their orginal purpose was to meet a need which no existing organisation met. Even on its present basis the Association has demonstrated what can be done by organisation on behalf of an industry. The need of such organisation will grow rather than diminish in the future. No industry in this country needs a powerful and representative body more than the chemical industry to give it its due place and influence among our national industries. The point that the Association is not yet fully representative is no real reproach. Most of the big organisations had their small beginnings. The simple way to meet the suggestion that the Association includes so many of the "small men" is for the "big men" to join forces with them. We believe they would be welcomed and every facility given for reorganising as far as might be considered necessary the present basis of the Association. The annual meeting is in April next. If this matter were taken in hand by a few of the leading big firms it might be possible, when the annual meeting comes round, to give the Association a new start, and thus to add greatly to the efficiency of the organisation by which the chemical industry is served. The idea seems to us well worth consideration.

The Supply of Intermediates

SOME points of great practical interest were raised at the last meeting of the Oil and Colour Chemists' Association in the course of a paper and discussion on the monoazo dyestuffs suitable for the production of lake and pigment colours. One suggestion was that the modern tendency to concentrate the manufacture of dyes in the hands of one or two large corporations might hamper instead of stimulate progress, and that the preferable policy would be for gas companies and other concerns to carry their crude products on to the intermediate stage, to place their own intermediates on the market, and thus to allow the pigment manufacturers of this country to become real colour makers instead of mere grinders in pan mills. In this, as in most matters, there are advantages on both sides. If the dye industry in England is to become self-sufficient for our home and export needs, it is necessary that research, experiment, and manufacture should have really large resources behind them, and that the processes should be under a more or less central control. To ensure this, concentration and combination on a large scale are essential. The recognition of this fact explains the great dye organisations which Germany created before the war, and the organisation more recently in this country of great commercial concerns subsidised for the purpose of permanently establishing a home dyes industry.

The fact that results of great national importance have already been attained by this policy of concentration need not blind anyone to the disadvantages in detail which accompany the gains. Our Free Trade traditions have given us a certain bias against monopolies, and there will always be advocates of the widest possible diffusion of research and technical effort as against their concentration in the hands of a few. It is a debatable point whether the national and commercial interest is best served by a large number of producers of crude coal tar products who themselves carry on the process to the intermediate stage, in which case we should have dozens of small research staffs at work, or by a few very large concerns who buy these crude products from others and specialise in intermediates, in which case the necessary research and manufacture would be in the hands of one or two great staffs. There are advantages in each policy, and the great thing is to combine them. We do not want such a complete monopoly as will place any national industry at the mercy of a handful of people and possibly sterilise scientific and technical effort; nor, on the other hand, do we want to depend on a multitude of little laboratories working independently and exclusively with staffs unequal to the subject. The remedy will probably be found, not in the adoption of one principle to the complete exclusion of the other, but in our national genius for discovering a good working compromise. The oil and colour chemists have, in any case, started an interesting problem, which touches other branches of industry beside their own, and we should be glad to have the views of those who favour the concentration theory.

Coal

THE past fortnight has found everyone, from the large industrial consumer to the ordinary householder, decidedly optimistic about the coal situation. Some miscalculation seems to have been made as regards output figures when the 6s. per ton increase was estimated, and although Sir Auckland Geddes has refused to commit himself by any definite statement as to a possible reduction, the miners' leaders are emphatically of the opinion that at least 2s. 6d. of the 6s. should now disappear. Everything must depend, of course, upon whether the comparatively satisfactory figures for output which have prevailed during the past few weeks will be maintained over the whole year, and whether existing prices for export will continue to rule. Some optimists are estimating the rebate at 3s. per ton, or more, but that under prevailing circumstances it would, perhaps, be unwise to anticipate too much in the way of a reduction. Incidentally, we hear vague rumours of preparations for another coal strike in mid-winter; but, as the 6s. rise has been a thorn in the side of the miner ever since its imposition, it is to be trusted that its partial removal may be followed by a more settled state of affairs. A reduction of even a few shillings should prove an immense stimulus to industry, and particularly to chemical and metallurgical undertakings, whose existence is dependent upon fuel in one or other of its forms. Three shillings on coal, moreover, would mean a reduction of about 3d. per 1,000 cubic feet in the price of gas, and proportionate decreases in the cost of foundry coke and electricity. Thus, the influence of a drop in price would be felt throughout most of the commodities we produce.

Meanwhile, other aspects of the coal situation are extremely promising, particularly as regards output, the welcome increase in which we recently drew attention to. Perhaps, however, the most noteworthy point is the extraordinarily high prices which exported coal is now fetching. During the month of October we exported approximately the same quantity of coal as during September, but the amount received during October surpassed the figure of the previous month by nearly £1,000,000. In fact, the price obtained per ton was 63s., as against 57s. for September, and 36s. for January last. When it is remembered that these prices are "free on board" rates it will be appreciated that, when freightage charges are added, the Continental consumer is at least deserving of sympathy.

"Nature"

OUR congratulations, a little delayed but none the less sincere, are due to our learned contemporary, *Nature*, on the attainment of its jubilee. The occasion is worthily celebrated in its jubilee issue of November 6, which takes the form of a comprehensive review of scientific progress in the last half century. The important place which chemistry holds among the sciences is indicated by the group of contributions by its leading exponents. Sir Edward Thorpe writes on the "Progress of Chemistry," Professor H. E. Armstrong on "Chemistry in the Making," Professor H. B. Dixon and Mr. H. Stephen on "The Discovery of Chemical Elements since 1869," and Professor J. C. Philip on "Physical Chemistry—Past and Present." In addition, the frequency with which chemistry is referred to in other articles exhibits it in the light of a "key" science without which its sister sciences could not pursue their work. Apart from the interest attaching to the fiftieth anniversary of its foundation this jubilee number of *Nature* is well worth keeping as a permanent collection of current scientific opinion. Sir Norman Lockyer, who has filled the editorial chair with such distinction from the beginning, will, we hope, see in this unique collection of articles which his scientific colleagues have contributed, and in the equally remarkable collection of personal tributes published in the succeeding number, some reflection of the high place he himself holds among British scientists and of the wide and deep respect which his work and character command. *Nature*, in providing a common bond between all the sciences, fills a place in current scientific literature which no other journal does. As one of its youngest contemporaries, and one which has received some very kindly and encouraging notices in its columns, we offer once more our congratulations to *Nature* and its veteran editor on their great work during the last half century and on the excellent prospect of its continuance.

The Calendar

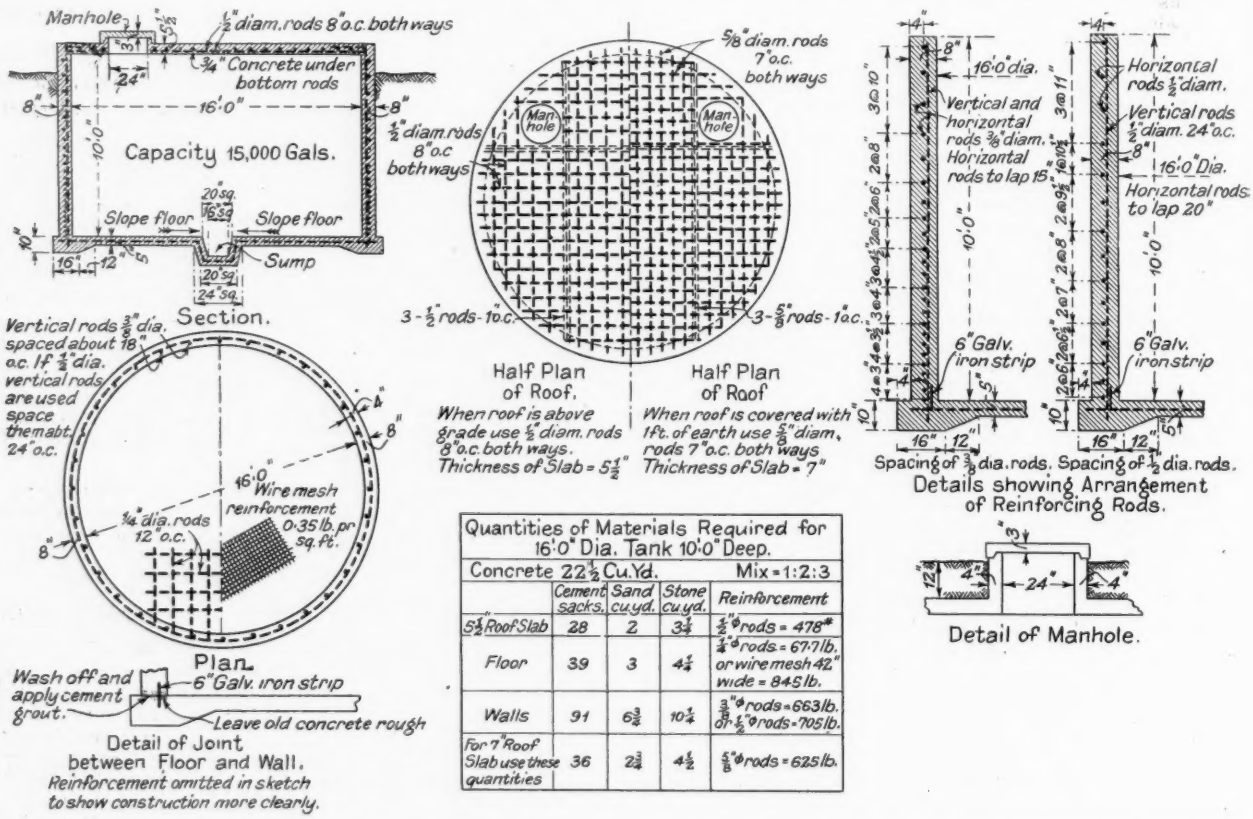
Nov. 25	Sheffield Association of Metallurgists and Metallurgical Chemists. "Notes on the Tensile Test," by G. Stansfield, B.Sc.	Royal Victoria Hotel Assembly Room, Sheffield.
25	"Evaporation," by H. J. Pooley (George Scott & Son (London), Ltd.).	Manchester Municipal College of Technology.
Dec. 2	"Evaporation" by H. J. Pooley (George Scott & Son (London), Ltd.)	Manchester Municipal College of Technology.
2	"Chromium Steels," by C. A. Edwards, D.Sc.	Royal Victoria Hotel Assembly Room, Sheffield.
4	Chemical Society. Ordinary Scientific Meeting.	Burlington House, Piccadilly, W. 1.
5	Society of Chemical Industry. (*a*) The Activated Sludge Process of Sewage Purification. By E. Ardern, D.Sc. (*b*) A New Method for Determining the Relative Temperatures of Spontaneous Ignition of Coals. The Influence of Degree of Fineness and Volatile Matters on the Results. By Capt. F. S. Sinnatt, M.B.E., and Burrows Moore, M.Sc.Tech., B.Sc., Eng., A.I.C.	Grand Hotel, Manchester.
5	Society of Chemical Industry (Bristol and South Wales Section). "The Incorporation of Amatol." E. P. Perman, D.Sc.	University College, Cardiff.
5	Society of Public Analysts. "New Distillation Method for Detecting Adulteration in Butter, and for Estimating Fats of the Coconut Group." George Van B. Gilmour, A.I.C.; "An Investigation into the Composition of the Unsaturated Hydrocarbons present in Coal Gas." F. S. Sinnatt, F.I.C., and L. Slater, A.I.C.; "A New Process for the Determination of Arsenic; with Notes on the Chemistry of the Marsh-Berzelin Process." B. S. Evans, F.I.C.	Chemical Society's Rooms, Burlington House, W. 1.
9	"Centrifugal Dryers and Separators." A. E. Alliott, B.Sc. (Manlove, Alliott & Co., Ltd.).	College of Technology, Manchester.

Concrete in Chemical Industry

By Ewart S. Andrews, B.Sc., M.C.I.

Mr. Ewart Andrews is a member of the Council of the Concrete Institute, and is well known as a consulting engineer and in connection with the text books he has published on the Theory and Design of Structures. In the following article he discusses generally the nature of concrete, with particular reference to its suitability for tanks and vats; the effect of oils and other materials upon the concrete is considered in detail.

THE shortage of steel caused by war conditions gave a great impetus to the development of concrete construction in this country. For many years concrete had been struggling against the combined forces of prejudice and ignorance to assert its efficiency for a wide range of structural applications; and although much work had been done in America and on the continent. British manufacturers were loth to adopt a method of construction which received little or no official support.


Manhole
½" diam. rods 8" o.c. both ways
¾" Concrete under bottom rods
Capacity 15,000 Gals.
Slope floor
Slope floor
Sump
Section.
5/8" diam. rods 7" o.c. both ways
½" diam. rods 8" o.c both ways
3-½" rods-1o.c.
3-5/8" rods-1o.c.
Half Plan of Roof.
When roof is above grade use ½" diam. rods 8" o.c. both ways. Thickness of Slab = 5½"
Half Plan of Roof
When roof is covered with 1ft. of earth use 5/8" diam. rods 7" o.c. both ways Thickness of Slab = 7"
16'0" dia.
Vertical and horizontal rods ⅜" diam. Horizontal rods to lap 15"
Horizontal rods ½" diam.
Vertical rods ½" diam. 24" o.c.
16'0" Dia.
Horizontal rods to lap 20"
6" Galv. iron strip
Spacing of ⅜ dia. rods.
Spacing of ½ dia. rods.
Details showing Arrangement of Reinforcing Rods.
Vertical rods ⅜" dia. spaced about 18" o.c. If ½" dia. vertical rods are used space them abt. 24" o.c.
16'0" Wire mesh reinforcement 0.35 lb. per sq. ft.
¼" dia. rods 12" o.c.
Plan.
Wash off and apply cement grout.
6" Galv. iron strip
Leave old concrete rough
Detail of Joint between Floor and Wall.
Reinforcement omitted in sketch to show construction more clearly.
Detail of Manhole.

Quantities of Materials Required for 16'0" Dia. Tank 10'0" Deep.				
Concrete 22½ Cu. Yd.				Mix = 1:2:3
	Cement sacks.	Sand cu. yd.	Stone cu. yd.	Reinforcement
5½" Roof Slab	28	2	3¾	½" ϕ rods = 478 lb.
Floor	39	3	4¼	¼" ϕ rods = 67·7 lb. or wire mesh 42" wide = 84·5 lb.
Walls	91	6¾	10¼	⅜" ϕ rods = 663 lb. or ½" ϕ rods = 705 lb.
For 7" Roof Slab use these quantities	36	2¾	4½	⅝" ϕ rods = 625 lb.

The usual fine aggregate consists of sand varying in size from ¼ inch to 1-100 inch, very fine sand or "flour" being unsuitable; the coarse aggregate consists of gravel, broken brick, or stone of various kinds, graded between ¾ inch and ¼ inch. The proportions usually adopted depend on the compressive strength of the concrete required, a common specification consisting of proportions by volume of one part cement, two parts fine aggregate, and four parts coarse aggregate. This is called a 1 : 2 : 4 mix. It has been shown that the best proportion for given materials is that giving the greatest density, and this property depends upon the materials employed. It is therefore clearly impossible to give round number proportions to get the best results for all materials. The proportions, in fact, should be determined only after careful inspection and test of the materials to be used.

The amount of water used in the mix is also a matter of importance, especially in cases where impermeability by fluids is essential, such as in tanks or vats. The correct amount of water depends upon the materials used and the season of the year.

Choice of Materials

Concrete may be described as an artificial stone made from three materials—Portland cement, fine aggregate, and coarse aggregate—which are mixed with water and allowed to set. Concrete is strong in compression, but weak in tension, and so in practice it is "reinforced" by means of steel bars so placed as effectively to resist the tensile stresses which would otherwise crack the concrete. One reason why concrete has had such a struggle for its existence is that people have not realised the importance of accurate determination of the materials in order to obtain the best results.

Design of Reinforcement

The careful design and accurate placing of reinforcement are matters which are essential for reliable construction; the ordinary builder has not the necessary knowledge or experience to enable him to decide upon the reinforcement. The design of reinforced concrete requires careful treatment by a specially qualified engineer, and great care has to be taken that the steel is placed exactly in the positions indicated by the engineer on the drawings. The importance

for this will be realised when it is remembered that the steel is entirely embedded in the concrete, and can no longer be seen when the concrete has been cast.

It is not within the scope of this article to deal with the calculations involved in the consideration of the stresses in the material; but we may note that the subject has been very fully investigated, and that we are now able to design reinforced concrete structures of almost any kind.

Application to Chemical Industries

Reinforced concrete is eminently suitable for practically all forms of factory structure, the reduced cost of upkeep and great fire-resisting qualities being points greatly in its favour. With respect to fire-resistance, we may point out that experiments made in this country and America show that gravel concrete is poor in fire-resisting qualities compared with broken brick or stone concrete; it is interesting in this connection to note that in the report upon the fire following the disastrous Silvertown explosion it is stated that:

"It is clearly shown that Thames ballast or gravel concrete is an unsuitable material for reinforced concrete in buildings where the risk of a severe fire has to be considered."

In addition to the structure of the factory itself, concrete can be employed for water towers, cooling towers, storage bins and bunkers, tanks, and vats of various kinds.

The chemical effect of the contents of a tank upon the strength of the concrete is a matter of great importance to the chemical engineer and upon which information is gradually being collected. This is a subject upon which chemists can do useful research work of a comparatively simple nature. We require first to ascertain whether a given material is harmful and—having found that it is—to decide what treatment can be adopted to remedy matters. Care should be taken to distinguish between the effect of chemicals used in the water with which the concrete is mixed and that of chemicals in tanks after the concrete has set.

Concrete tanks are specially adapted for use with chemicals, partly because of their durability, and partly because of the adhesion between the concrete and the outlet castings that is entirely lacking in wood. It is necessary, however, that the gates and other connections, which are usually of brass or bronze, be so heavy that the corrosion and wear upon them will not necessitate removal, and therefore repairs to the concrete, since it is impossible to form a satisfactory joint between old and new concrete in a thin wall.

It must of course be recognised that cement is soluble in a very strong acid, such as sulphuric; and to a less extent it is affected by weaker acids. Concrete will resist the action of acids of moderate strength better than most other common materials of construction.

The Institute of Industrial Research at Washington reports as follows:—"It will be noted, as the result of lists up to the present time, that the following materials have been successfully stored in concrete tanks: Menhaden oil, lard oil, tanning solution, caustic soda solution 4 per cent., and sauerkraut. The following materials have shown superficial disintegration of the concrete with considerable modification of the material itself: Sulphite liquor and cider vinegar.

Concrete tanks treated with paraffin wax are proof against cider and vinegar.

Tanks used in paper mills to hold fairly concentrated chlorine solution have provd satisfactory after six years' use. Acid-proof asphalt mastic lining for concrete tanks has proved effective for resisting sulphuric acid.

Oil Tanks

Oil tanks built of concrete in America have proved to be quite satisfactory. The illustration shows the design of a comparatively small oil tank as suggested by the American Portland Cement Association as the result of many years' experience. A giant oil-fuel reservoir has been successfully constructed by the Admiralty at Rosyth, and smaller tanks in this country have proved satisfactory after more than two years' use.

The following summary of a recent report upon experiments conducted by the American Bureau of Standards may be taken as giving reliable information. Tests were made with various oils in small containers of concrete of the usual 1 : 2 : 4 mix and also of the richer mix 1 : ⅔ : ¾ used for the concrete ships, the latter mixture being also tested under a 25 ft. head.

The following is a summary of the results obtained:—

1. Various mineral oils, covering practically the entire range of fuel oils, have been stored in concrete tanks approximately thirteen months, apparently without injuring the concrete in the slightest degree.

2. Concrete test cylinders 6 × 12in. have been stored in these oils during the same period, and have shown no appreciable diminution in strength.

3. A number of vegetable and animal oils have been stored successfully in concrete tanks for a period of thirteen months, and only two, *viz.*, cocoanut oil and lard oil, have appreciably attacked the concrete.

4. Quantitative losses of fuel oils have been determined in 1 : ⅔ : ¾ concrete tanks under pressures of 12 to 15 inches of the oils, and in a smaller number of tanks under a pressure head of 25 ft. These measurements indicate that even under the latter conditions heavy and medium-weight fuel oils can be stored in concrete of the character without excessive losses. The storage of kerosenes and gasolines under these conditions will probably prove uneconomical unless some impervious coating can be found which will be durable under long exposure to the lighter oils.

5. In a single test of six months' duration, spar varnish has apparently been effective in successfully retaining a 43 deg. kerosene of .015 viscosity. The loss during this period has been practically negligible.

It will be noted that the statement with regard to lard oils does not agree with a previous statement, and the writer believes that the temperature of the oil is the determining factor.

Royal College of Science Chemical Society

Inaugural Address by Professor Donnan

At the Royal College of Science, South Kensington, on Friday, November 14, Professor F. G. Donnan opened the session of the College Chemical Society with an address on "The Nitrate Industry of Chile." Professor H. B. Baker, head of the Chemistry Department of the College, occupied the chair, and there were present Professor J. C. Philip, Dr. M. A. Whiteley, and other members of the staff, together with about 200 students.

The address, which lasted about an hour, combined extensive knowledge of the subject with a clear and witty exposition. Professor Donnan, who is head of the Chemistry Department at University College, has recently returned from Chile, where he has been for some time recuperating after a serious breakdown in health. Although he was ordered there for a "complete rest," he spent his time in making an exhaustive examination of the nitrate industry. He spoke of the mining and manufacturing processes in some detail, and finished with a short account of the relative merits of several of the theories which have been advanced to account for the formation of the nitrate beds. The lecture was illustrated with about thirty lantern slides and various specimens of the deposits constituting the beds.

The Society is this year commencing what promises to be one of the most successful sessions in its history. During the latter part of the war it was almost non-existent, but, in the hands of a competent committee, it bids fair to make up for lost time this session. While most of the papers are read by the students themselves, a lecture has already been arranged to be given by Professor G. T. Morgan in March. The Society also aims at making its members acquainted with technical processes by arranging visits to factories; quite a number of such excursions have already been arranged, and the list is still far from complete.

Oil and Colour Chemists

Colour Makers' Demand for Supplies of Intermediates

"Monoazo Dyestuffs Suitable for the Production of Lake and Pigment Colours" was the subject of a paper read at the meeting on November 13 of the Oil and Colour Chemists' Association by Mr. W. H. Allsebrook. Mr. W. J. Palmer presided.

The paper dealt in some detail with the history of the discovery and development of monoazo dyestuffs, and references were made to the various patent specifications in which the conditions for carrying out the various operations are given. Soluble monoazo dyestuffs were divided into two classes, viz., amidoazo and oxyazo compounds. The number of amidoazo compounds is limited, aniline yellow affording the best example. It was the first to be discovered, and was used for dyeing wool from 1861 to 1863.

The preparation of lakes depends upon three factors: (1) the dyestuff itself, (2) the precipitating agent, and (3) the inert base on which the lakes are struck, which served the purpose of either increasing the body of the lake or modifying or toning down the shade. It also helped to reduce the cost. Certain insoluble monoazo derivatives of beta naphthol were introduced in 1889, viz., para-nitrobenzenazo beta naphthol (para-nitraniline red) and naphthalene azo-beta naphthol (alpha naphthylamine Bordeaux), which are of great importance to the textile industries. They had found considerable employment as pigment colours when struck on suitable bases, owing to their brilliancy and fastness to light. They were not, however, insoluble in oil, and when used in oil colours had the disadvantage of penetrating and staining other colours.

The greatest importance, however, from the colour maker's point of view, attached to the insoluble pigment lake dyestuffs, introduced in about 1900 by German aniline colour manufacturers especially for the manufacture of pigment colours. The author described these as being sold under a variety of names which told nothing as to what they were made from or how they were made, coming on the market, as they did generally, in the form of 20 per cent. pastes, requiring only either to be ground with suitable bases or mixed with water to a thin consistency with the base, and developed, sometimes, by boiling with certain metallic salts, which gave variations of hue to the lakes so treated. The application of these new pigment lake dyestuffs being soon recognised, a constantly increasing number were produced, which not only superseded the old lakes made from natural dyestuffs, but in many cases had proved cheap and efficient substitutes for the mineral pigment. How essential this class of colouring-matter was to so-called aniline colour manufacturers in this country was fully realised towards the end of 1914. It was true that English manufactured lythol Red R was now on the market, but not in sufficient quantities. Similarly, Lake Red P was on the market, but of greater interest to the lake makers was the fact that its intermediate product, paranitraniline sulphonic acid, of English manufacture, was now for sale.

British Intermediate Products

In this connection Mr. Allsebrook added that the intermediate products required in this country could be produced by the large British dye concerns, and if only members of the Association interested in the production of pigment lake dyestuffs collectively demanded a certain intermediate, they might stand some chance of getting the product at a reasonable cost, which would enable them to produce the finished product at prices which would compete with foreign supplies.

Although lead chromes held the field at present on account of their excellent covering power and brilliancy, certain monoazo yellows had the advantage of not becoming discoloured by the action of sulphuretted hydrogen. They resisted the action of lime and were not poisonous. In addition, they were fast to light, and although more expensive than the lead chromes, had considerably greater staining powers. How soon such yellows would be able to compete in price with the lead chromes he was not able to forecast, but he drew attention to the fact that pre-war monoazo oranges were not only able to compete with the oranges produced from basic lead chromate in price, but had the advantage of withstanding heavy grinding, and gradually taking the place of orange chromes in the floorcloth and linoleum industries. Zinc chromes might have certain advantages over lead chrome as regards resisting the action of lime and sulphuretted hydrogen, but they found only a limited use when lake yellows were obtainable, for the latter possessed six times their strength, and gave, when mixed with blues, more brilliant greens. Genuine vermilion had been completely replaced by fast reds, which not only could compete in price, but excel in fastness and staining powers. He took the view that if colour makers were able to obtain suitable intermediate products they would be able to produce the necessary colours more satisfactorily than under present conditions, when they did not handle the intermediate products.

Points in the Discussion

Mr. A. Molteno thanked the author for his description of the manufacture of the intermediate products for those dyes which were most important and most useful for pigment colours. The preparation of beta naphthylamine sulphonic acid was a matter he had been trying to find out for a long time, but had not been successful. The important point in connection with lakes and so on was fastness to light, and he would like to know whether the dyestuffs of the monoazo group varied in fastness according to the number of the nitrogen atoms.

Miss F. M. Merrick asked for the working proportions of a lythol red using alcohol or methylated spirit, and wished to know whether there was any recovery of the alcohol used. It seemed to her rather an expensive form of manufacture.

Mr. E. S. Haynes said that in the use of lythol red, particularly the yellow shades, he had noticed repeatedly that British-made dyes were extremely solvent in water. That was not the case with German dyes, and it was giving trouble in the printing-ink trade, owing to the fact that some of the colours were used in lithographic work, where the material came into contact with water. He presumed it had something to do with the purity of the preparation. That was a point to which British manufacturers should give attention.

Colour Makers' own Dyes

The Chairman emphasised the point that pigment manufacturers in this country should aim more at obtaining their own intermediate products and producing from them their own dyes. That was rather a new development, because in the old days, with very few exceptions, it was neither countenanced nor looked upon with favour by German manufacturers. He felt, however, that it was the line for future development by pigment manufacturers in this country. It would allow of more scope for individuality in obtaining colours, and probably lead to better results. The main point was to obtain a pure intermediate, but up to the present he was afraid that that had been one of the great difficulties. He did not agree with the author that certain of the reds mentioned in the paper were much superior to vermilion. It might be so in some cases, but the fastness was not so reliable as in tints and reddish shades using zinc, lithapone, or white lead, as were often required in paint and enamel manufacture. Whilst Hansa yellows and similar products might replace lead and zinc chromes in many cases, he thought that the question of body, from the point of view of the paint and enamel user, was an important consideration. Whilst Hansa and similar yellows always had a certain amount of body, they always wanted bolstering up with some base having considerable body, and not only was the dyestuff itself expensive, but, when taken into account with the point he had mentioned, it resulted in an expensive product, and he was afraid it would be long before it would be a serious competitor with zinc and lead chromes.

Mr. Tyson asked if the author had had any experience of the manufacture of certain cheap colours by the pan mill process, and if he considered that the development of such colours as lake red B and lythol red in a pan mill would have the effect of deteriorating the colour, and also whether the same effect could be obtained as when using a vat.

Wider Diffusion of Dye Industry

Mr. O. Wilkins thought it would be interesting if he stated that the British Dyes Corporation was now larger than any one of the individual firms in Germany, as they existed before the war. Seeing that they had only had a few years in which to get into that position, he thought it spoke very much for the results which had been obtained. He had seen samples of lythol red which were quite equal to the German pre-war stuff, and he believed it would be on the market in quantities in a few weeks time. He was certain that there was a great future for the aniline dye industry in this country, and during a recent visit to the works of the British Dyes Corporation he had been surprised at the extension and development which had taken place. Dr. Levinstein had assured him that there was not a dye product in the whole of the German pre-war selection which they could not make when they had sufficient time to collect the plant together. He believed that the solution of the dye problem in this country, however, was not for it to be concentrated in one or two large corporations, but for the gas companies and other people to carry their crude products to the intermediate stage, and allow colour makers in this country to be the real colour makers, and not mere grinders in pan mills. Instead of there being only one man at work producing colours, as was the case when the work was concentrated in one large corporation, there would be many men scattered over the various colour makers' works, and he felt very strongly that that was one of the solutions from the colour maker's point of view.

The author, replying to the discussion, said that the fastness of many of the monoazo dyestuffs was fairly good, and many of the later ones, such as the oranges, were absolutely fast to light. A paper which would deal with this subject more fully, however, was to be read later in the session. Answering Miss Merrick, he said that one of the Bâdische specifications dealt with the manufacture of lythol red using alcohol. He himself, however, had had no experience. With regard to the purity of dyestuffs mentioned by Mr. Haynes, he believed the trouble was in coupling the sodium salt. He had never been able to make a lythol red R equal to the German product according to the original German specification, but he had been able to do it by dissolving beta naphthol in caustic soda and throwing it into a fine state of division with phosphoric acid. He believed the pan mill development of lythol red, mentioned by Mr. Tyson, to be on the right lines. Lythol red R could be made more brilliant by concentrated solutions than by weak solutions. He agreed with all that Mr. Wilkins had said with regard to intermediate products. With regard to the Chairman's remarks on the body of dyestuffs, he believed these dyestuffs would be produced with a good body. The German dye people had set themselves out to do this business right, and they had done it right in many ways. Even zinc and lead chromes were not all they should be sometimes. Just as the war began, the Bayer Co. had some products which had a very good body indeed.

The proceedings closed with a hearty vote of thanks to the author.

Electro Bleach and By-Products

Capital to be Increased to £480,000: The Company's Bright Prospects

An extraordinary general meeting of Electro Bleach and By-Products (Ltd.) was held in Manchester on Friday last, November 14, Mr. H. J. Mackinder, M.P. (chairman), presiding.

It was proposed to increase the capital of the company to £480,000 by the creating of 200,000 7 per cent. Participating Preference shares of £1 each and a like number of Ordinary shares at 10s. each, while it was proposed to issue 80,000 shares of each class.

Mr. Mackinder, in proposing the resolution, remarked that he was leaving the country very shortly for Russia on an important mission which had been entrusted to him by the Government. He hoped the meeting would agree to the resolution, and put the directors into a position to crown and complete the policy which they had been pursuing through fair weather and foul for the last six years. He did not intend resigning his chairmanship, as the board had given him a leave of absence for the few months to visit Russia. The directors at a meeting that afternoon had decided to declare an interim dividend on the Ordinary shares for the half-year ended June 30 of 7½d. per share, less income tax at 6s. in the £1; being at the rate of 12½ per cent. per annum. Referring to the proposed increase of share capital, Mr. Mackinder said he would dispose at once with one obvious criticism which might be levelled against one paragraph dealing with profits during the four succeeding years 1915, 1916, 1917, and 1918. In round figures the profits were £30,000, £50,000, £50,000, and £60,000. During these four successive years it might be said that these results were no guidance for the future, in that they referred to war profits. In 1915 the profits were made under adverse circumstances, in that owing to the war it was impossible to establish economies in manufacture which had been contemplated, and the same applied in a little less degree to the next year. Then during 1917 and 1918 they were a controlled firm, and were selling to the Government at fixed prices. Strictly speaking, they were selling at a censored profit, and over and above that they were never able to establish the economies intended.

How the Funds will be Used

Mr. Mackinder next dealt with the way the directors proposed to use any funds which resulted from the new issue. There were three items, and with regard to the £35,890 due to the Government, he dealt with that at the last ordinary general meeting. It was in respect of plant, buildings, and machinery erected for greater output, and the sum stated still remained to be paid to the Government. A certain amount had already been paid to the Government out of the general reserve fund of the company, and the feeling of the board was that they would like to be masters in their own house, and it would be very undesirable that for a term of years any Government Department should have a claim upon the profits. With regard to the item of £10,000 over and above the plant, machinery, and buildings for which the Government advanced, the Government set up as their own property upon the works certain plant, machinery, and buildings which were left, though Government property, upon the company's land at the conclusion of the war. Such mixed ownership was inconvenient. A bargain had been struck which pleased both parties, and for £10,000 the company had a property which was available for manufacturing purposes. The third item was one of £50,500, with which the directors proposed to redeem the whole of the outstanding Debentures. From the point of view of capital, the company was a relatively small one, and in difficult times and commercial crises it was always well to feel that they had deep water beneath them. From the revenue point of view a small company such as this was better credited in the open market if it was able to say that it had no debentures. That meant they could do better business when they went into the market with their credit in their hands. It was far better at the present moment to give credit than to ask for it. At this moment a firm which was able to give credit in foreign countries in establishing new markets was the firm which was planning well for the future, obtaining goodwill for the future, and they were anxious to lift the company into the top tier of manufacturing companies—companies that can give credit and not have to ask for it. They wished to enjoy the advantage of a company which could say this—No Debentures. The items enumerated roughly came to £96,000, and if they sold their Preference and Ordinary shares at par there would be left available for extension and developments something like £24,000. The money required to pay dividends of 7 per cent. on the 80,000 New Preference shares and 12½ per cent. on the 80,000 New Ordinary shares was £10,000. The repayment of the Debentures would mean a saving in Debenture interest and sinking fund of £6,000 per year, and the repayment of the loan from the Ministry of Munitions would mean a saving of interest amounting approximately to £2,150 per annum, leaving therefore a balance of only £2,450 to be found out of the profits.

Securing the Success of the Issue

Mr. Mackinder, proceeding, said they had been able to sell the whole of the issue on favourable terms. The directors had made it a condition that present shareholders in the company should have a preferential right to take shares at these prices, provided that they gave notice of their requirements. After all expenses had been paid there would be a considerable margin in the way of premium to the advantage of the company, and that premium would be available to be put in the reserve fund. Referring to the profits of the company during the past four years, the Chairman said these profits had not been obtained at the expense of those whom the company employed. Both the wage-earners and the staff which was paid salaries had had their position steadily improved during the war, and he had no hesitation in saying that the staff and the men were one of their great assets.

Mr. Hutchins, managing director, seconded the resolution, which was unanimously carried.

The meeting then gave their sanction to the necessary alterations in the articles of association.

A special general meeting of shareholders immediately followed, after which came a meeting of Participating Preference shareholders, and both these meetings confirmed the adoption of the resolutions.

The Chairman announced that a further extraordinary general meeting of the company would be held on December 5 to confirm the special resolutions passed.

British "Key" Industries

Chemical Exhibits at the Glasgow Exhibition

"We may cite as a typical and well-known example of a 'key' industry that of dyestuffs. The annual value of the dyestuffs, mainly imported from Germany (which were used in the textile and paper industries of this country before the war) was about two millions sterling, and the annual output of those industries was valued at about two hundred millions, giving employment to about a million and a half of our people, so that in this case the 'key' industry amounted to about one per cent. of the main industry, or was in something like the proportion of a key to the door which it opens. Yet without the best of dyestuffs British textile goods would stand no chance in the competition of many of the most important markets. . . . Up to the last few years this country was by far the largest producer of coal-tar in the world, and we are still (or were at the outbreak of war) second only to Germany in this respect. Similarly the raw materials of almost all the other 'key' industries are to be found in abundance, and in some cases exclusively, within our own Empire. Yet we allowed these priceless Imperial resources to be controlled, and in some cases practically monopolised, by our deadliest enemies."

The above extracts are from an interesting foreword written for the official catalogue of the new British Science and Keys Industries Exhibition—opened this week at the Kelvin Hall of Industries at Glasgow—by one of Glasgow's best known Members of Parliament, Mr. H. J. Mackinder. Mr. Mackinder has always taken a deep and active interest in the development of British business, and with the promotion of the new Glasgow Exhibition he has been actively associated. The Exhibition comprises nearly two hundred stands, and quite a good proportion are connected directly or indirectly with the chemical and allied trades. Some of these firms were represented at the British Industries Fair held in Glasgow some eighteen months ago, but generally the exhibitors are firms who have not hitherto had an opportunity of exhibiting their specialities at least in Glasgow. We give below some notes respecting the chemical exhibits:—

The British Drug Houses, Limited (London) include in their exhibit many synthetic products which they claim to be chemically identical with the German specialities sold under proprietary names, and this part of their exhibit is proving of great interest. Numerous specimens are shown of dyes in dry form as well as in solution, and in certain instances the solid stains are claimed to be from two to four times the strength of the standard stains formerly supplied by German manufacturers.

Thermit Limited (London), established in 1904, well known as the proprietors of the Alumino-Thermic patents and as the original manufacturers of Thermit and its products in this country. Their exhibit is divided into three main sections consisting of (*a*) pure carbon free metals and alloys, (*b*) thermit compound for various purposes, and (*c*) the Thermit process of welding. All the raw materials used by this company are products of Allied countries and all the equipment, apparatus and machinery are of British manufacture.

J. Arthur Greene (London) in collaboration with the technical advisers of the Committee on the Production of Oil from Coal, &c., has a most interesting exhibit of raw materials, crude oils, and refined products. It embraces no fewer than fifty samples of carbonaceous materials from the various deposits in Great Britain, and samples of lignite from Devonshire as well as shale from Scotland and Dorset. The specimens, by the way, are loaned from the private collection of Mr. Greene himself.

British Oil and Cake Mills, Limited (London), include in their exhibit seed-crushing, oil-extracting and other interesting processes. Oils expressed from linseed, cottonseed, rapeseed, palm kernels, copra, ground nuts, soya beans, &c., are shown. The firm are also displaying stearines, olrines, vegetable pitches, &c.

The South Metropolitan Gas Company (London) have a general exhibit divided into two sections, namely, pre-war products and post-war products. This exhibit comprises examples of chemical prepara-

tions representative of this company's manufactures in various branches of the chemical industry, and indicates the great progress made in these branches during the war. Coal-tar intermediates for dyes and ammonia products are displayed.

British Dyestuffs Corporation, Limited (Manchester) are well to the forefront with an exhibit primarily designed to illustrate the many applications of coal-tar dyes, and this object is very successfully achieved. The products of this company are applied not only to all kinds of textile fibres in various stages of manufacture, but are also used for the dyeing and colouring of leather, paper, paints, distempers, soaps, fats, waxes, oils, varnishes, boot polishes, writing and other inks, grasses and artificial flowers for decorative purposes, straw, wood, buttons, celluloid, &c.

Brotherton & Company, Limited (Leeds), put forward their claim in the official catalogue to be the largest concern in the United Kingdom engaged in the manufacture of ammonia and tar products, and they show a wide and varied range of metachrome colours for production of the large range of fast shades of wool and other fabrics. Among the general exhibits are acid chroming colours, acid colours suitable for dyeing wool, silk, jute, paper and leather; liquid ammonia in all strengths, &c.

John W. Leitch & Company (Huddersfield) content themselves with a show case displaying benzol, toluol, xylol, solvent naphtha, and glauber salts.

Brunner, Mond & Company, Limited (Northwich) are showing ammonium nitrate produced from nitric acid made by the catalytic oxidation of ammonia; while among the other chemicals shown are ammonium nitrate (produced from imported calcium nitrate and ammonium carbonate). Many other chemical products are on view.

The Gas Light and Coke Company (London) are showing products of coal tar distillation and of coal gas purification, and these products are displayed in a condition for being marketed as well as some of their applications. Prussian blues for various uses (both in light and dark shades) are also on view; while examples of application of British blues in numerous trades are also illustrated.

W. J. Bush & Company, Limited (London) claim that notwithstanding difficulties in obtaining a special plant required for the synthetic preparation of fine organic chemicals for medicinal and other purposes, this product has been so far developed that the firm is now well equipped to meet German competition of all kinds. There is a wide range of these scientific products on view, and a special point is made of their purity—all of them being subjected to the most careful analysis in order to ensure a reliable standard of quality.

The United Alkali Company, Limited (Liverpool) have a most important range of all classes of chemicals on exhibit, including aluminium chloride, zinc chloride liquor, sulphur chloride, salamoniac, sodium formate, soda crystals, pure nitric acid, magnesium chloride, etc.

Koppers Coke Oven and By-Product Company (Sheffield) show an interesting series of coloured photographs and drawings, and one of these serves to illustrate (among other things) tar stills at the Cadishead Works of the British Tar Products Limited erected by the Koppers Company. Another photograph shows wash boxes in a coal washery with a portion of the plant consisting of fifty-five coke ovens with by-product recovery plant and coal washery erected by the same company; while a coloured drawing is given showing the Koppers patent system of recovering tar and ammonia direct from coke oven gas.

Lennox Foundry Company, Limited (London), have also a range of interesting photographs showing chemical plant for the production of drugs, dyes, and heavy chemicals. Working models are also on view of the firm's electrically heated vacuum drying and subliming ovens; working models of autoclaves vacuum grinding and drying mills; while there is also an exhibit showing the properties of tantiron and other alloys.

R. Graesser, Limited (Ruabon), shows, among other chemicals, phenol from coal tar, artificial musk in aqueous alcohol, sodium sulphocarbonite, zinc sulphocarbolate, glauber salts, dark cresylic acid, disinfecting powder (grey and pink), and other specialities.

Sir Charles Parson's Address

In declaring the exhibition open, Sir Charles Parsons said that during the last one hundred years the advances in science and manufacture had been so phenomenal, and the scope so much widened, that it had become increasingly difficult to keep in touch with so great a range of subjects, and some degree of specialisation had become imperative for the worker; on the other hand it was essential for him to have some general knowledge to maintain co-ordination and mutual support in his work. An exhibition such as that supplied both these needs in a form that could be readily assimilated. Not only were there included models of engines, but machines, products, and chemicals were represented in variety and abundance. Let them hope that the example of James Watt would be followed and that many might study closely the exhibits and might be led to further advances in the wide fields now open to enthusiastic and fertile brains. There could be no doubt that in a country where the names of Watt, Kelvin, Faraday, Stephenson, Napier, Brunel, and many others were household words, and where great and glorious achievements had been accomplished in the past, with diligence and mutual sympathy still greater achievements would be accomplished in the future. In science and in other fields the Clyde took a high place of honour. Lord Kelvin, in addition to his great contributions to science, added his immense improvements in the mariner's compass and his sounding machines, which were known throughout the world and had greatly increased the safety of navigation. Professor Barr had likewise much improved the range-finder, and for the construction of these beautiful instruments he had founded big works where from 2,000 to 3,500 hands were employed during the war, and these instruments gave much increased accuracy to the guns of the Allies. In declaring the exhibition open he wished to congratulate the Corporation upon their most admirable and broad-minded policy. He believed that Glasgow was the only city in Britain which had been holding an exhibition annually for many years, and this was a boon not only to the inhabitants of the district but to many persons from other parts of the United Kingdom.

Artificial Abrasives

Interesting Paper before Birmingham Societies

A joint meeting of the Birmingham and Midland Section of the Society of Chemical Industry and the Birmingham Metallurgical Society, called by the former, was held on Thursday, November 13, at the University of Birmingham, when Mr. C. J. Brockbank, of Thorold, Ontario, read a paper on "Production of Artificial Abrasives in the Electric Furnace." The newness of the subject attracted a large attendance, over which Mr. L. P. Wilson, F.I.C. (Coventry), presided.

First Artificial Abrasive

Mr. Brockbank pointed out that the production of artificial abrasives required large quantities of electrical energy, and this explained why the huge plants were restricted to districts where full advantage could be taken of water power. In Canada there were several huge plants devoted entirely to the manufacture of artificial grinding materials, but consisting of two groups, one silicon carbide, and the other aluminous abrasive, or artificial corundum. The first artificial abrasive was discovered by Dr. Acheson in 1890, while endeavouring to crystallise carbon, by dissolving in melted silicate of alumina fused by a small electric arc in an iron pot. His ignorance of chemistry led to one of the most remarkable discoveries in the electro-metallurgical field, and formed the foundation of what was to-day one of the most important industries in the world. Dr. Acheson, conceiving that the blue crystals resulting from his experiments must be a combination of carbon and alumina, and ignorant of their real chemical composition, named the material carborundum.

Mr. Brockbank showed that silicon carbide, while highly efficient in the grinding of materials such as cast iron and marble and in the finishing of leather, was not a universal abrasive. It was unsuitable for producing the fine finish required in steel grinding. The discovery that aluminous ores such as bauxite and emery could be electrically smelted with coke, and commercially pure crystallised artificial corundum obtained therefrom, completed the requirements of the abrasive field, and rapidly forced natural emery into the background, except for a few restricted operations such as glass polishing.

Chemistry of the Process

Silicon carbide was formed by the reaction at high temperatures of silica and carbon. In practice it was found necessary to add varying amounts of sawdust and sodium chloride—the former to maintain porosity, so that the large volumes of carbon monoxide might escape without causing blowholes at local spots in the furnace; the salt to assist in the elimination of impurities present in the coke and sand as chloride. A typical furnace mixture when all new materials were used was:—Petroleum coke, 1,500 lb.; white sand, 2,520 lb.; sawdust, 300 lb. (18 c.f.); and salt, 40 lb. A considerable proportion of the mixture used in a furnace was not converted into silicon carbide, acting merely as a heat insulating blanket, and this material would ordinarily be returned to the mixing department. Petroleum coke was the carbon residue left in the stills when distilling crude oils. It was the only form of carbon that could be used satisfactorily for producing the highest grade of silicon carbide. This did not appear to be due altogether to its purity since good silicon carbide could not be made from lamp black, but was, in some way, due to the readiness with which this form of carbon was converted into graphite by the agency of heat. Charcoal was readily changed to graphite and similarly made excellent silicon carbide. Silicon carbide furnaces were built in sizes varying from 1,000 h.p. capacity to 3,000 h.p. capacity. A furnace of less than 1,000 h.p. size could not be operated economically. A 3,000 h.p. furnace would produce approximately 7 per cent. more silicon carbide per unit of power input than a 1,000 h.p. furnace, although the advantage was somewhat offset by the fact that the quality from the largest size was not so good. A 1,000 h.p. electric furnace was 20 feet long between the heads carrying the electrodes, and 5 or 6 feet wide inside. The heads carrying the electrodes were 40 inches thick, and two electrodes were used for each terminal, made from graphite 10 in. diameter and 48 in. long.

Loading the Furnace

The furnace was charged with mixture slightly above the level of the electrodes, and a trench formed in this mixture 36 in. wide and 10 in. deep, which was filled with about 1,200 lb. of graphite powder. This formed the resister core, and conducted the current from one terminal

to the other. Mixture was then piled on this core and the furnace was ready to operate. There was considerable shrinkage during the run, the level gradually falling below the side walls of the furnace. The side walls must not be removed till at least twenty-four hours after a furnace had been disconnected, otherwise the product was liable to be damaged by oxidation.

The crystalline silicon carbide was crushed in a pan mill after removal from the furnace. It was then treated in a bath of sulphuric acid and caustic soda; the effect was to remove the surface impurities from the grain consisting of graphite, silicon, silicides of iron (mainly Si Fe_2), and silicide of aluminium. It was then washed and dried in a rotary dryer, and passed over screens which separated the grains into various sizes from $\frac{1}{8}$ in. mesh to 1-220 in.; finer sizes were graded by hydrostatic methods. This material formed the pure product used by the wheel manufacturer for making abrasive wheels.

Manufacture of Artificial Corundum

Aluminous abrasives or artificial corundum were manufactured by smelting a mixture of bauxite and coke in an arc furnace; the impurities, mainly silica and iron oxide, were reduced and settled to the bottom of the furnace, and the fused alumina was recovered in the form of a large pig or ingot weighing four to five tons. A typical furnace mixture was calcined bauxite, 1,750 lb.; coke, 100 lb.; iron borings, 350 lb. The furnace was started by placing a layer of mixture in the furnace about 1 ft. deep, and laying a train of graphite powder from one electrode to the other on the top of this. As soon as a small path of molten ore was formed this carried the current, and more mixture was charged into the furnace as required. These furnaces operated at about 100 volts, and require 550 k.w. Reduction must not be carried too far, otherwise the abrasive would be too pure and brittle. The presence of one or two per cent. of iron oxide, silica, and Titanium dioxide increased the toughness of the product. The metallic residue recovered would contain from 10 per cent. to 15 per cent. of silicon. Sufficient iron borings were added to the mixture to keep the silicon content of the alloy below 15 per cent.; otherwise the material would be separated from the crushed corundum. Power was a comparatively small proportion of the total manufacturing cost of artificial corundum, and it would, therefore, appear to be quite practicable that aluminous abrasives should be manufactured in England at a cost that would compete with the foreign product.

The paper, which was well illustrated, aroused considerable interest, and a short discussion followed.

The Conservation of Oil

A Breezy Paper by Rear-Admiral Dumas

In a paper before the Institution of Petroleum Technologists on Tuesday, November 18, Rear-Admiral Dumas read a paper on this subject, which was distinctly out of the run of the ordinary paper read before a scientific society. It was quite general in character, and the style in which it was delivered may perhaps best be gathered when it is stated that the author is one of the Fisher school at the Navy—or rather he was before he retired. Consequently the paper was delivered with a vigour and directness of speech uncommon in papers usually read at such meetings.

The keynote of the paper was the elimination of waste, as will be seen from the following passage:—"It is this factor which is the keynote of my lecture, for inquiry shows waste—waste all along the line. Haphazard education and waste of brains, wasteful search, wasteful boring, wasteful production, wasteful storage, wasteful use of main and by-products, wasteful transport, wasteful retail sale, waste in the lack of concentrated chemical research into its constituents, and lastly waste in its most economic use. Indeed, we might think that the whole oil industry had been nationalised."

It was urged that well-considered reform should come from within the trade itself, and that proposals should come before the Government to decree that licences for boring within the British Empire should not be indiscriminately granted, except to corporations with large funds; that boring without considerable readily available storage should not be undertaken; and that it should be treated as a criminal act to burn or destroy what at the moment are deemed to be waste products, and which later chemical research may prove to be worth their weight in gold. Furthermore, under the ægis of the Institution experiments should be carried out with regard to the efficient burning of all sorts of oils and the provision of better forms of burners.

Haphazard Methods of Education

Was it not the fact that our educational methods were haphazard? It was not enough that a Chair in oil research should be established at Cambridge. There was ample room for a university for geological education alone, and the great oil companies should build and endow one. If that could not be done, then Chairs of Geology should be established in every university. Scholarship should also be provided. Again, frightful waste took place in production owing to the lack of immediately available storage. It would be instructive to know if proper tanks were ready *before* the flow of oil from the borings in Derbyshire and other places. He doubted it. It also appeared from a paper which was read before the Institution last year that the machinery in use on the oilfields to-day was notoriously inefficient. Again, in purification and manufacture, was nothing wasted here, and would it not be better to transport all crude oil to be dealt with at more real centres of civilisation? There was also wastage in transport, which he was told was only 1 per cent., but 1 per cent. of a 12,000 ton cargo was by no means to be sneezed at, and could be reduced by attention to detail. Then there was the transport for retail trade. Surely for the lighter oils, at all events, small pipe-lines diverging to great distributing centres would be sounder than horse or motor transport of great boiler-like drums, and was it not possible to have a more efficient container than the ordinary 2-gallon petrol can?

Chemical Research in Oil Fuel

As regards chemical research into the constituents of oil fuel, he had noted with pride and satisfaction that some of the wealthy oil companies were endowing research at Cambridge, but was that sufficient, and did we do enough in that way in Great Britain? In similar departments of Krupp's and a great munitions works in Great Britain there were employed 120 and 7 chemists respectively!

Coming to the question of waste in use, Admiral Dumas said it was when burned under a boiler to raise steam that oil was wasted most, and the worst sinners in this respect were warships and naval officers. Oil must be preserved and taken care of, and in the case of the large battleships, which he thought would soon cease to be needed, coal only should be used during peace. In regard to merchant shipping, little oil fuel was used at present, but the wise economic working of fast liners, cargo and mail boats, demanded its use on particular routes. It was necessary, however, to insist upon its most economic use, and the first step should be to raise the price of oil to its proper and legitimate height.

Having outlined some of the uses of oil in ordinary commercial life, Admiral Dumas referred to the possibilities of new oilfields. Twice in his life—once in the Indian Ocean and again on the West Coast of Africa—he had steamed through oil, and the atmosphere reeked of it. It was up to the great and wealthy companies to search for and locate the sources. Above all we must increase production at home. The great need was a suitable internal-combustion engine, and it was largely owing to the lack of a suitable internal-combustion engine for merchant shipping that he computed that, roughly, a hundred million sterling per year was wasted, and something like half of the oil produced in the world was clean thrown away.

Outspoken Critics of the Paper

The tone of the discussion may be gauged from the remarks of Sir Charles Greenway, who said that, listening to the paper, he had rubbed his eyes and wondered whether it had been written twenty years ago. Practically all that the author said ought to be done in regard to research had been done for many years past. The staffs of chemists of the British oil companies, for instance, were as large as those of any foreign company. Sir John Cadman jokingly suggested that he did not think the author meant his paper to be taken seriously, and Sir Tennyson D'Eyncourt, Admiral George Goodwin, and Admiral Sir John Pakenham speaking from the engineering side of the use of oil in the Navy, differed from the views of the author, and neither Sir Marcus Samuel nor Sir Charles Greenway anticipated any shortage in supplies. Indeed, it was suggested that the present supplies, during the next ten or fifteen years, would be doubled. Three new wells have been sunk in Persia during the past ten days which are yielding 30,000 tons of oil per day.

Future of the Chemical Industry

Address by Dr. E. F. Armstrong

The inaugural meeting of the new session of the Liverpool Section of the Society of Chemical Industry was held at the Adelphi Hotel on Monday. Mr. A. T. Smith, managing director of the Castner-Kellner Alkali Works, Runcorn, who is the retiring chairman of the Section, presided over an unusually large gathering representing practically every phase of the industry; and Mr. J. Gray, vice-chairman of Lever Brothers and president of the Society of Chemical Industry, was also present.

Dr. E. F. Armstrong (technical managing director of Messrs. Joseph Crosfield & Sons, Warrington, and Messrs. Gossage, Widnes), the new chairman of the Section, delivered his inaugural address. All would agree, he said, that the importance of the chemical industry had never been properly appreciated in this country in the past. In the war its deficiences were made glaringly obvious, and there were lamentably few signs that the public understood its problems or had an earnest desire to assist in their settlement.

Large Scale Production

He drew a comparison between German and British methods and conditions, showing that by a system of "pooling" and combination, without sinking individuality, the Germans had solved the problem of cheap production. Opinion in this country and in America had been opposed to trusts, but large-scale industries were an unescapable development of the future in these western countries.

In outlining the needs of the industry in England, he emphasised the importance of technical boards and the predominance of men with a firm grip on the problems by which they were faced. The manager of the

future must be a modern "Admirable Crichton," in touch with every phase of the work, and in full sympathy with the laboratory. With a few exceptions, the post did not command sufficient remuneration to attract the type most desired—namely, the ex-public schoolboy, with high scientific ability and business acumen. It behoved them also to see that the engineer, as well as the chemist, was trained for their needs. "Labour is perhaps the greatest problem to-day in chemical, as, indeed, in all work," proceeded Dr. Armstrong. "Higher wages, shorter hours, less work, all tend to increase the cost of production, which will end in stopping buying in our own markets. This is the greatest menace to success. Unless production per individual is increased, high wages can only means higher prices. This matter rests unduly heavily on the chemists' trade. Fortunately the handling of it is in experienced hands, and our trade has long been the most progressive in its treatment of the workpeople." The steady deterioration of coal was another handicap.

Turning to the question of the factories established by the Government to supplement the chemical works during the war, Dr. Armstrong said that these had been erected on sites condemned by experts and at such inaccessible points that the industry could get no benefit from them now in the period of reconstruction. Though he had mentioned German competition, he did not wish it to be understood that he praised them unduly. Nevertheless, we must not make the mistake of underestimating them, even if they were "down and out."

A False Theory of Research

Referring to the unprecedented step taken by the Government in setting up a Department of Scientific and Industrial Research, Dr. Armstrong said that, judging from its organisation at present, the meaning of "research" had been misunderstood. Investigation which had for its object the solving of a certain problem and turning that solution to commercial ends was utilitarian, proper, and wise, but it was not real, pure research. There was a risk that the actual progress of their industry on its theoretical side might be sacrificed to the merely utilitarian phase of the moment.

Mr. A. T. Smith said the British chemical industry was short of almost everything it needed, and they had almost an enemy in their midst in the shortage of raw materials and the apparent reluctance of Labour to pull its weight. Until it was realised that nothing could be had for nothing, they were simply going to be left behind. "Fortunately," he added, "it is not England's lot entirely. That is the only comfort one can see."

Mr. Arthur Carey regarded the transport situation more threatening than that in regard to Labour, remarking that we were "within a short distance of a complete breakdown."

Standardised Sale Contracts

New York Opinion on a British Scheme

Our enterprising New York contemporary, *Drug and Chemical Markets*, recently published a copy of the British Chemical Trade Association's standardised sales contract and rules of arbitration, and we are now informed that few subjects have attracted such genuine trade interest in New York as that created by the publication of this document. The British Association's model sales contract was submitted to the Board of the American Dyes Institute by Mr. H. Gardner McKerrow, of the National Aniline and Chemical Co. It was well received, and a hope was expressed that it would receive prompt and favourable consideration, not only from the dyestuffs interests, but from the entire chemical trade. The matter was referred to a committee of leading members, with instructions to report to the next meeting.

"In England," Mr. McKerrow stated, "I understand that arbitration has succeeded in settling most disputes in a period of thirty days. This is a startling contrast to the time it takes to arrive at a definite decision through our courts. The trade must remember very well the famous logwood suit which was started in March, 1916, and which did not even come to trial until February, 1919, lacking just one month of three years. Manufacturers in both the dye and chemical industries know very well what an expensive process these suits are, and the time is now ripe for united action to prevent this unnecessary and costly inconvenience. There will always be honest differences of opinion in business, but such differences do not pre-suppose dishonesty, and they can most certainly be justly settled to the satisfaction of both parties concerned through arbitration. This is a matter in which I have long been deeply interested. You may remember that when we were working for the organisation of the dye industry, from which the Dyes Institute has resulted, I made two proposals as emphatically as I could make them—one for standardisation of dyes, and the other for a uniform sales contract."

Mr. J. A. Chew, sales manager of the Warner Chemical Co., when asked his opinion of the proposal, said: "Greater simplicity in selling under a standard form of chemical sales contract appeals strongly to me. It would be particularly valuable in sales to the great consuming industries, such as textiles, paper, leather, rubber, and so forth, where the purchases are not primarily chemical in their nature, and where the multiplicity of forms of contracts used by chemical manufacturers places an unnecessary burden upon purchasing agents. A universal contract, simple in its clauses, and with plain definitions as to conditions, would be welcomed alike by buyers and by salesmen. It would be a step forward in the more efficient distribution of chemical products."

Mr. P. H. Anderson, the American manager of the Chemical Works Madoery, of Basle, Switzerland, states: "The Swiss experience proves that arbitration is a feasible way of settling such disputes, and there is no doubt that if the custom were adopted in this country it would be very greatly to the benefit of both sellers and buyers, keeping many cases out of the courts and saving in aggregate a great deal of time, effort, and money."

Mr. A. W. Hawkes, vice-president of the General Chemical Co., however, does not favour the adoption of the British Association's model sales contract, mainly on the grounds that British law and business practice differs considerably from American.

We learn from the British Chemical Trade Association that their form of sales contract and rules of arbitration, which the American Dyes Institute is now considering, is found to work well in this country. The effect of the standardised conditions of sale is to prevent disputes, and where disputes do arise, the terms of arbitration facilitate their settlement. In several cases, we understand, judges of the High Court have referred disputes to be settled on the terms of this document.

The World's Chemical Needs

At the International Trade Conference recently held at Atlantic City, New Jersey, it was stated by Mr. C. H. MacDowell, chairman of the American Committee on Chemicals, that the Italian delegates had extended an invitation to American capitalists to invest in Italian chemical industries. The United States needed more from France, in the importation of potash from Alsace, than that nation did from America. The French delegation was informed that the United States was prepared to take for the coming spring all the potash Alsace could ship, that a small importation was now being received, but that strikes, interior transport and ocean shipping difficulties should be easily overcome as many ships are now returning in ballast. It was estimated that at least 50,000 tons of pure potash, contained in, say, 200,000 tons of mixed product, could be spared from French needs for winter and spring movement, if it could be shipped.

Commenting upon the general chemical situation, the committee's report says: "The demobilisation of war industries has been proceeding rapidly. This has been especially true in the chemical industry, which was so greatly stimulated during the war. Much of the chemical plant equipment needed for war production has great value in peace times. This is especially true in agricultural chemicals and dyestuffs. By a strange coincidence, plants and cannon eat the same food, and nitrogen compounds, acids, phosphorus, potash and other alkalis and chemicals are basic commodities, both in war and peace. Before the war, Germany had a practical monopoly in several chemical lines, and as it is easier to buy than to make, other countries had dozed along chemically, and had not appreciated the basic nature of chemical production in its relation to national safety and its peculiar 'key' position with regard to the making of many articles not at all related in the public mind to chemical production. War developments brought home sharply the need of a self-contained national chemical production and of an army of trained chemists. Since the war manufacturers, frequently supported by their governments, have been working to change over war plants to peace production and to round out the output to the end that their countries need not go abroad for the bulk of their chemical needs. National chemical independence is recommended, and perhaps to an exaggerated degree, as international chemical commerce is important."

Acid in a Steel Drum

At Glamorgan Assizes, at Cardiff last week, a claim was made for damages for alleged negligence against Arthur John, metal merchant, of Llanelly, in respect of a workman named Keene, whose death was caused by an explosion while using an oxy-acetylene blow-pipe. There was also a claim by the plaintiff against Messrs. Pearce & Sons, steel scrap merchants, of Sheffield.

Mr. Marlay Samson, K.C., for the plaintiff, said that John had purchased through Pearce & Sons a number of steel drums which he intended to break up for scrap iron. Peace & Sons obtained the drums from the Royal Gunpowder Factory at Waltham Abbey. The drums were forwarded to John by Pearce & Sons without being cleaned. A letter from John to Pearce & Sons was produced in which he gave notice that he intended to use the oxy-acetylene blow-pipe in breaking up the drums. Pearce & Sons had been informed by Waltham Abbey of the existence of acid in the drums. In September, 1918, Pearce &

Sons wrote to Waltham Abbey stating that as many of the drums sent to them contained waste acid the added weight should be taken into consideration. Keene was working on one of the steel drums, using an acetylene burner, when there was a very slight explosion in the tank on which he was working. Later in the day Keene was engaged on another drum, when there was a big explosion, and he sustained injuries from which he died. It appeared that after the first explosion Keene, with extreme caution, made two holes in the side of the drum to allow the gases to escape. Sulphuric acid had apparently formed inside the drum, which on its mixture with the hydrogen let in by the holes, exploded on the application of the flame from the burner.

Arthur Job, chief chemist at the Llanelly Steel Works, gave evidence that it was usual for drums of that kind to be cleaned of their deposit before being sent to the steel works.

G. H. Clamp, Civil Administrative Officer of the Royal Gunpowder Factory, said they would have warned the contractors had they thought the drums were dangerous. They did give warning to the workmen handling the drums of the danger of dregs of acid running over them. He had no knowledge of what the scrap merchants did with the drums.

H. G. Ward, chief storekeeper at the Waltham Factory, said if they had known that a flame was going to be used a very serious warning would have been issued by his department.

Mr. Vaughan Williams, K.C., for the defendants, Pearce & Sons, argued that there was nothing negligent in forwarding a closed vessel to a man who, there was no reason to believe, would apply a flame to it.

The defendant John said that he left it entirely to Keene to break up the drums in his own manner. At the time of the accident Keene was using his own plant. Witness had since learned from Pearce & Sons that the drum which exploded had contained sulphuric acid. Although thousands of drums had been broken up on his premises there had never been an accident before.

Augustus Pearce, of Pearce & Sons, stated that he had been buying steel drums for twenty-six years, and with one exception he had never heard of an accident having occurred with any one of them. In his opinion it was unsafe to use heat on a closed vessel. He was not aware that the drums contained acid.

Judgment was reserved.

The Work of the Pharmaceutical Society

Mr. N. N. Armitage, President of the Leeds Chemists' Association, presided at a "Peace dinner" of members at the Hotel Metropole, Leeds, last week. Among those present were Mr. W. L. Currie, president, and Sir W. S. Glyn-Jones, secretary, of the Pharmaceutical Society.

Responding to the toast of "The Pharmaceutical Society," Mr. W. L. Currie said that since the war the Pharmaceutical Society had been very active in safeguarding the interests of chemists all over the world. The Council had done a magnificent work in the placing of ex-service students. Up to date 1,078 students had been placed, and a like number were undergoing training. In regard to the recent passing of a by-law admitting a certain number of holders of Apothecaries' Hall certificates to membership of the Society, he contended that the Society had taken the only possible course. If they had not passed the by-law, a Government measure would probably have been passed which would have opened the door much wider than was safe for pharmacy or for the public.

Acknowledging the toast of "The Guests," Sir William Glyn-Jones referred to the Englishman's habit of deprecating his own country and his own countrymen. Far too many regarded it as being the right thing to do, but he was not sure that that was a healthy state of things. He had very little use for the people who were always lowering the stock of their country and their cause. He believed that our descendants would be proud of the fact that we were not prepared for the war, and of the way in which, being unprepared, we rose to the occasion and took the magnificent part in it which we did take. We had every reason to be proud of the way the people of the country conducted themselves during the war, and even more immediately of the way we were now slipping back into our normal life. What was true of the country was just as true of their own Society. They had played their part in the war, and were now playing, and determined to continue to play, their part in the peace. (Applause.)

Ancient and Modern Lake Pigments

At a meeting of the Bradford Junior Branch of the Society of Dyers and Colourists at the Leeds University on Thursday, November 13, Mr. G. G. Hopkinson, of Bradford, presiding, a lecture on "Ancient and Modern Lake Pigments" was given by Dr. J. B. Oesch, the lecturer and research chemist in the Department of Colour, Chemistry, and Dyeing at the University.

Dr. Oesch dealt with the history and the development of the preparation and uses of pigments, and said that the methods of manufacture and the constitution of the organic pigments had from time immemorial been used by artists in the painting of oil covers on canvas, and also by dyers and printers in the production of their varied coloured and historically famous fabrics. The development of the art of dyeing increased very largely the number of pigments from artificial sources. It was difficult to say, however, if natural colouring matter was first used for dyeing textile fabric or for the preparation of a pigment and employed by painters. It was certain that the art of dyeing was known in the earliest times, and probably the tinctorial properties of these colours were first exploited for painting walls, &c. Dr. Oesch also demonstrated the methods of the preparation of lakes, by giving a few examples, and described the starting chemicals for their preparation. Selecting kermes, cochineal and madder as three important examples, he said that the first-named was the oldest dyestuff on record. Scarlet dye, which it produced, was known in the East in the times when there were no houses. There were pieces of cloth from Egypt, dated as far back as 300 A.D. which were dyed with kermes, and the colour was still perfectly fresh and bright looking.

Effect of Sheep Dips on Wool

A lecture on the effect of sheep dips upon wool was delivered before the Leeds University Textile Association last week by Dr. Sidney Williamson, of the Cooper Research Institute.

Dr. Williamson spoke at some length upon the properties of the various kinds of dips, which he classified as follows:—Preparations of pure nicotine, as extracted from tobacco; cresylic acids, prepared with soap; a solution of pure white arsenic; and a compound of alkaline sulphide, made by boiling either lime with sulphur, or caustic soda with sulphur. As to the effects of these dips upon wool, Dr. Williamson confessed that it was impossible to say, for the reason that such investigation as had been carried out was largely of a biased character. Practically they had only the evidence of the proprietary sheep dip manufacturers, who were making a living out of the article which they sold, and, on the other hand, of the respective Governments whose object it was to give the farmers as cheap a dip as possible without running the risk of killing the sheep. The whole discussion as to the effects of dips on wool had unfortunately centred mostly in the lime and sulphur dip, the one which the farmer himself made for the sake of cheapness. Naturally, that dip was opposed by the manufacturers of proprietary dips. In spite of much research for authentic evidence as to the injurious effects of dip upon wool, the lecturer said he had come across nothing which could be regarded as conclusive.

Regarding the lime and sulphur dips made by the farmers themselves, if they could have the dip made perfectly and used under perfect conditions, there would be no injury to the wool. But the danger was that when the lime and sulphur dip was made carelessly, and used without proper regard to the conditions, the effect might be to render the wool harsh and so as not to dye properly. The Sheep Dipping Committee, which reported to the British Government in 1904 upon the dips then on the market, came to the conclusion that they produced no injury whatever to the wool. Dr. Williamson gave it as his opinion that nicotine in dip was not injurious so long as pure nicotine was used. Carbolic acids, as a rule, were only injurious if they contained an excess of alkali, which tended to disintegrate the fibres. If a farmer used impure tar oil in dipping, he might get wool which, after scouring, would turn almost brick-red in colour, but such instances were rare. With regard to the lime and sulphur dip, he had seen a great deal of wool which had been injured. It had become harsh, and lost its lustre, a condition which was probably due to the deposition of lime, which formed salts in contact with the fats in the wool. These lime salts were probably deposited upon the fibre, but he had never yet been able to prove it. Arsenical dips were not injurious unless an excess of alkali had been used in making the arsenic soluble. On the whole, he was inclined to believe that the arsenical dip improved the wool, but it was an exceedingly difficult thing to prove.

The Late Mr. Julius Benn

We record with deep regret the death, which took place at Ealing on Friday, November 14, of Mr. Julius Taylor Benn, one of the founders and at the time of his death a director of Benn Brothers, Ltd. Mr. Benn was born on November 14, 1852, and his death thus took place on the anniversary of his birth sixty-seven years ago. Mr. Julius Benn, beginning as an office boy in Mincing Lane, worked his way through the various grades of clerkships until, at the age of thirty, he had acquired a wide experience of the import and merchandising of the products of Asia Minor and Eastern Europe. His elder brother, Sir John Benn, had begun in 1880 the publication of the first of the series of trade newspapers. Mr. Julius Benn joined him and brought his financial and business experience to the development of the publishing enterprise. He established a printing works in Olivers' Yard, City Road, together with an engraving plant and lithographic department, all of which he controlled with ability for twenty years. This printing works, in addition to producing Benn Brothers' publications, achieved a reputation for the design and printing of trade catalogues. Mr. Benn was alone responsible for the production of some of the most important trade lists that had up to that time appeared, and many important catalogues for Colonial houses were produced under his supervision. When, in 1880, Sir John Benn relinquished the active control of the business for public and political work, Mr Julius Benn became the responsible head of Benn Brothers, Ltd. Under his guidance the business expanded to a remarkable degree, and though he ceased from active daily participation in business affairs some ten years ago, he was a regular attendant at the monthly board meetings of the company. The latest enterprise of the firm was the establishment of The Chemical Age, and Mr. Julius Benn was much interested in the rapid progress of this journal.

Colnbrook Chemical & Explosives Co.

Statement of Affairs

In the compulsory liquidation of the Colnbrook Chemical and Explosives Co., Ltd., of 1, Queen Victoria Street, E. C., Mr. W. J. Warley, Official Receiver, has issued to the creditors and to the contributories a summary of the statement of affairs, showing the position as at the date of the appointment of the receiver for the mortgagee and the taking over of the Company's business under the Defence of the Realm Act. This discloses liabilities, £95,716, of which £48,886 are returned as expected to rank, and estimated assets, £56,757, of which £244 are required to meet the claims of preferential creditors and £46,586 loans on mortgage and debenture bonds, leaving £9,927 available to meet the claims of the unsecured creditors, who are, accordingly, faced with a deficiency of £38,958. Including a deficiency of £15,506 to the contributories a total deficiency of £54,464 is shown.

In his observations, the Official Receiver reports that the Winding-up Order was made on June 4, 1919, upon a creditor's petition. The statement of affairs was submitted by Mr. Edward Manville, M.P., a director; and had been concurred in by Messrs. Henry Lovegrove, Cornelis Rozenraad and J. M. ver Mehr, directors. The company was registered on July 20, 1915, with a nominal capital of £21,000, for the purpose of carrying on business as manufacturers of gun-cotton, explosives and munitions of war; its primary object was to acquire from O. R. Mounsey the benefit of a contract with the War Office for the supply of 200 tons of gun-cotton, and to carry out a contract with the representatives of the Belgian Government for the supply of a minimum quantity of 300 tons of gun-cotton. The company was promoted by Mounsey, who may have been assisted by others. Mounsey had obtained a further contract from the Ministry of Munitions, dated July 12, 1915, for the supply of 600 tons of gun-cotton at the price of 1s. 8d. per lb. This contract had been assigned by him to the Wraysbury Chemical Works, Ltd., which was registered on September 16, 1915, with a nominal capital of £20,000. By an agreement, dated October 15, 1915, the company undertook to carry out the contract referred to on behalf of the Wraysbury Company. The cost of manufacturing the gun-cotton was estimated at 1s. 2d. per lb., and the price to be paid to the company was fixed at 1s. 3d. per lb., *i.e.*, three-fourths of the price payable to the Wraysbury Company; in the event of the cost of manufacturing exceeding 1s. 3d. per lb., the Wraysbury Company agreed to pay such excess price to the company. The Wraysbury Company further agreed to apply or procure applications for 18,000 Preferred Ordinary shares and have, in fact, subscribed and paid for 14,500 shares. The agreement provides that the moneys subscribed by the Wraysbury Company should, after payment of £500, the balance due to Mounsey under the agreement, be applied to the satisfaction of the Wraysbury Company so as to increase the existing plant and machinery of the company from its then capacity to a total output capacity of 36 tons per week. Under the agreement, the Wraysbury Company had the right to nominate three directors, (one of whom was to be the managing director), and, accordingly, Ver Mehr and Lovegrove were appointed directors, and Mounsey managing director.

The company was unable to complete the erection of the plant and machinery required to carry out its contract with the Commission Belge (the representatives of the Belgian Government), and on December 22, 1915, an agreement was entered into for payment to the latter by the company of £3,000 by way of indemnity for the delay in making deliveries of gun-cotton. The agreement further provided for the delivery of monthly specified quantities of gun-cotton to the Commission Belge, and for the payment of an indemnity of £20 per ton in the event of non-delivery. The company had the right to discharge the indemnity of £3,000 above-mentioned by reducing the price of the gun-cotton to be supplied from 1s. 5d. to 1s. 3d. for the first 150 tons, and from 1s. 4d. to 1s. 3d. for subsequent deliveries until the total amount of £3,000 had been discharged. On February 22, 1916, a further agreement was entered into between the company, the Wraysbury Company and the Commission Belge, which provided for payment to the latter of additional indemnities amounting to £2,760 for non-delivery of the minimum quantities of gun-cotton agreed to be supplied by the company to the Commission Belge under the agreement mentioned.

On February 21st, 1916, the company borrowed £2,000 on the security of a debenture for £2,100 (which included a bonus of £100) for the purpose of reducing the amount of Sir H. Bartlett's debenture to £12,500. On February 28th, 1916, the company raised a loan of £12,500 from Howard, Houlder & Partners, Ltd., on the security of a debenture for £13,437 10s. (which included a bonus of £937 10s.), repayable in six monthly instalments. The debenture for £2,100 was discharged out of the £12,500. By March 3, 1916, the company's bank balance had been reduced to £1,231 15s., and negotiations were in progress for obtaining a loan from the Government.

On April 14, 1916, an agreement was entered into between the Minister of Munitions, the Commission Belge, the company and the Wraysbury Company, wherein it appears that the Minister had cancelled the contracts for the delivery of the 200 tons and 600 tons of guncotton referred to, that a sum of £5,562 10s. had been agreed upon as payable to the Commission Belge by way of liquidated damages, and that fresh proposals had been made by the company and the Wraysbury Company to the Minister, and the Commission Belge for the supply of guncotton.

Government advances £19,067

The Ministry of Munitions advanced to the company, in all, sums amounting to £19,067, out of which the purchase of the factory for £9,437 was completed. A first mortgage is held by the Ministry in respect of the sums advanced, the debenture holders having agreed to postpone their rights in favour of the Ministry. The moneys at the company's disposal appear to have been insufficient to enable it to carry out the terms of the contract for guncotton with the Ministry of Munitions and the Commission Belge, and on June 16, 1916, the company's solicitors wrote to the Ministry that they were instructed by the directors to state "that our clients, with great regret, do not now consider that they would be justified in continuing the business of this company for the production of guncotton for the Belgian and English Governments, in view of the position with which the company is now faced." On June 22, 1916, the Ministry appointed a Receiver and took possession of the company's factory under the Defence of the Realm Act. The Receiver's account of the assets realised, shews a balance in hand of £2,123 9s. 4d., but accounts of the working of the factory under the Defence of the Realm Act cannot be obtained. The contract of April 14, 1916, for the supply of guncotton by the company was formally cancelled by the Ministry on July 17, 1916.

Negotiations appear to have been entered into with a view to obtaining compensation from the Government for taking over the company's factory, but without result. It is alleged that the debenture holders offered to pay off the first mortgage and to carry on the business themselves, but such offer was not accepted, and it is reported that the debenture holders are putting forward a claim for compensation apart from the company, they having been advised that such claim would be prejudiced if included in that of the company, whose claim, whatever it may be, still remains to be formulated. The claim of the mortgagee and the debenture holders, which amounted to £46,586 0s. 9d. on June 22, 1916, and upon which interest has since been accruing, will require to be satisfied before any assets will become available for unsecured creditors, and it will be seen, therefore, that compensation would require to be on a large scale to be of any benefit to unsecured creditors.

The Statement of Affairs is lodged with a memorandum that the value of the company's assets has been taken at cost, but the directors contend that the true value should be the market value of the premises as a going concern at June 22, 1916, the date when possession was taken over under the Defence of the Realm Act. The failure of the company is attributed by directors to various causes including incorrect estimates of the companies' engineers, late delivery of machinery, and further capital expenditure on plant required to meet the demands of the Ministry of Munitions.

Trade with "Occupied" Germany

The following proclamation has been issued by Sir William Robertson, Commander-in-Chief of the British Army of the Rhine, respecting trading in the British occupied zone: Whilst the import and export of goods remain free, such goods and the persons dealing in them in the British occupied territory are to be subject to the existing German laws, excepting in so far as these laws have been suspended, altered, modified, or superseded by the British military authorities. The effect of this paragraph is not retrospective. Allied subjects are to have the right to bring actions against other Allied, neutral, or German subjects before the German Courts. Similarly German subjects have the right to bring actions against Allied subjects before the German Courts. All sentences and decisions in cases where Allied subjects in the British occupied territory are concerned can be annulled or modified by the British Military Governor on appeal being made within three days. No sentence or decision of the German authorities will take effect until five days have elapsed. All persons, whether principals, representatives, or agents, trading in the British occupied area must be in possession of a trading certificate where required by German law. These will be issued by the German authorities. The British authorities reserve to themselves the final decision as to granting or refusing such certificates, which must be applied for before November 21.

Substitutes in Chemical Plant Construction

It seems very probable that France will adopt for good the war-time practice of using substitutes for copper, zinc, tin, nickel, bronze, and lead in the construction of chemical plant and apparatus. These substitutes consisted in the main of thin layers of metal resting on an iron or concrete base. Thus acid-resisting foundry pig iron, sandstone, glass, etc., have been of the greatest utility, and pans of concrete lined with glassy or refractory material have proved efficient substitutes for copper pans. Reversion to the use of copper, nickel and tin would but swell the volume of imports, depreciate the exchange still further, and involve sacrificing the successful results of the application of much skilled labour. It would appear that the use of copper for chemical plant has been more a matter of routine or habit than of necessity. —*J.S.C.T.*

From Week to Week

OVER 80,350 TONS OF OIL have been destroyed by a fire at Grozuy, Northern Caucasia.

CONSIDERABLE DAMAGE has been done by fire at the works of the Cheshire Bleaching Co., Wilmslow.

DR. R. H. PICKARD, B.Sc., PH.D., F.R.S., of Blackburn, has been appointed principal of the Battersea Polytechnic.

MESSRS. PILKINGTON BROTHERS, glass manufacturers, St. Helens, propose to erect a large factory at Kirk Sandal, near Doncaster.

AT THE LAST MEETING of the Bristol and South Wales Section of the Society of Chemical Industry at Cardiff, Mr. F. J. Popham, A.I.C. read a paper on "Peat."

MISS M. E. LAING has been appointed research assistant in physical chemistry in connection with the Leverhulme chair of physical chemistry at the University of Bristol.

PROFESSOR ARRHENIUS, A SWEDISH CHEMIST, strongly advocates that Sweden should contribute to the Ramsay Memorial Fund and send a Fellow to England for research work.

DR. J. GORDON PARKER has been elected president for 1920-21 of the International Association of Leather Trade Chemists, the next conference of which will be held in London in 1921.

MR. J. T. CARGILL, a director of the Anglo-Persian Oil Co., and several other oil and rubber companies, has offered £20,000 to the University of Glasgow for the foundation of a Cargill Chair of Applied Physics.

NOTICE IS GIVEN that applications for grants from the Chemical Society Research Fund, made upon forms obtainable from the assistant secretary of the society, must be received on or before Monday, December 1 next.

SIR E. RAY LANKESTER has just completed fifty years' editorship of the *Buarterlk Journal of Microscopical Science*, and the current issue contains a brief summary by Prof. G. C. Bourne of the contents of the journal for the last half-century.

PROFESSOR F. HABER, Berlin University, has been awarded the 1918 Nobel Prize for chemistry. Professor M. Blanck, Berlin Univeisity, and Professor Stark, Griefswald University, have been respectively awarded the 1918 and 1919 Nobel Prizes for Physics.

AN EXPLOSION OCCURRED on Saturday last at the Royal Naval Cordite Factory, Holton Heath, near Poole, as the result of which a workman, Jesse Orchard, of Poole, was killed. He was engaged on an acetone recovery stove in the cordite section, when it suddenly ignited.

THE FUND FOR establishing degrees in commerce at the University of London, started at the Mansion House during the mayoralty of Sir Charles Hanson, now amounts to about £120,000. In addition, the trustees of Sir Ernest Cassel's fund have made a conditional offer of £150,000.

A WELL-ATTENDED MEETING of pharmacists' assistants and apprentices was held at Cardiff last week, when, after an address by Mr. A. J. Gillian, national organiser of the Amalgamated Society of Pharmacists, Drug and Chemical Workers, it was decided to form a branch of the union.

AT A MEETING on Wednesday of the Senate of London University it was resolved that in recognition of the gift of £34,500 by Sir Ralph Forster, to the fund for the Chemistry Buildings and Equipment at University College, the Organic Department of the Chemical Laboratories should be known by his name.

IN YESTERDAY'S *Times Engineering Supplement* there appeared a comprehensive article on "Waste Heat Recovery," by Mr. Alwyne Meade. The subject is one which has attracted a good deal of attention lately, and is of considerable importance owing to the relation it bears to the economy of fuel utilisation.

BORING OPERATIONS for coal in the Dukeries and farther east have been carried out by two of the principal coal and iron companies in Derbyshire, and the result is stated to have been the discovery of vast fields of valuable coal. In many villages top hard coal has been reached, and the famous Barnsley seam proved at lower level.

ACCORDING TO *Stubbs' Weekly Gazette*, the failures in the United Kingdom for the week ended November 15 were 30, an increase of 18. The number of bills of sale registered and re-registered was 142, an increase of 97. Mortgages and charges registered by limited companies amount to £5,709,468, the amount authorised (where stated) being £627,000.

CAPTAIN PHIL STEPHENS, R.A.F., of Swansea, left last week to take up his new post as engineer and manager of the Christmas Island Phosphate Company, South Pacific. Mr. Stephens is a native of Burryport, South Wales, and served an apprenticeship as an engineer at Llanelly, subsequently taking up a position under the Canadian Pacific Railway Company at Montreal.

THE GEOLOGICAL SURVEY OF GREAT BRITAIN AND MUSEUM OF PRACTICAL GEOLOGY, JERMYN STREET, S.W. 1, has been transferred for administrative purposes from the Board of Education to the Department of Scientific and Industrial Research as from November 1. Correspondence with reference to the work of the Survey should be addressed as heretofore to the Director of the Survey and Museum, Jermyn Street, S.W. 1.

SEVENTY THOUSAND TONS of potash will be shipped to the United States by Germany during the next six months, according to a statement issued by the U.S. Shipping Board. The potash will form a return cargo for American ships calling at Hamburg, and will be brought to Savannah, Charleston, Norfolk and Wilmington (N. C.). About 10,000 tons a month will be available.

FURTHER WAGES ADVANCES awarded by the Court of Arbitration are announced. Salt and chemical trade workers aged eighteen and over are to receive an increase of 5s. a week, based on a week of six days or six shifts. The claim was for 15s. By consent of both parties, claims for the consolidation of all war bonuses and percentages into wages, and the establishment of a forty-four hour week for all workers, were withdrawn at the hearing.

DURING THE PAST WEEK the first full cargo of kainite (potash salt containing 14 per cent. potash) since the beginning of the war, from the mines in Alsace, which were formerly in German possession, came into the Tyne and discharged at Stephenson's Chemical Manure Works. Supplies of high-grade potash salts (sulphate of potash 90 per cent.) have also been received under Government purchase from Germany, per regular steamer, by the same firm.

THE FOLLOWING PLANS have been passed:—Chemical research laboratory for Messrs. Howard & Sons, Ltd., Uphall Works, Ilford; tower for carbon filter at Brook's Mill, for J. & T. Brook, Ltd., Ossett; carbonising shed for the Shepherd Hill Mill Co., Shepherd Hill, Ossett; recreation hall for the North Lonsdale Iron and Steel Co., Ltd., Ulverston, and extension to works offices of the Wolverhampton Steel and Iron Co., Lower Horseley Fields, Wolverhampton.

THE MINISTRY OF MUNITIONS announces that the following stocks of non-ferrous materials (exclusive of old metal and scrap) in this country were in possession of the Minister of Munitions on November 1 last:—Copper, 18,492 tons; spelter (g.o.b.), 14,727 tons; spelter (refined), 11,563 tons; aluminium, 9,353 tons; soft pig lead, 64,832 tons; nickel, 2,100 tons; antimony regulus, 3,200 tons. A proportion of these stocks is already sold to the trade for forward delivery.

EFFORTS ARE BEING MADE to extend the activities of the scientific and technical group of the Royal Photographic Society, which consists already of 137 members. It is hoped to be able to distribute among the members abstracts or translations of scientific communications made to other societies or publications, as well as to arrange for scientific and technical lectures and papers, and that this new arrangement will lead to a greatly increased interest in the science of photography.

THE SHORTAGE OF SULPHATE of ammonia in the United States is reported to be serious. Derived principally from the coke industry, the supply is automatically curtailed by the steel strike. The export as well as the domestic demand for this material is enormous. The foreign demand, it is reported, increased greatly during the labour unrest in England, and taxed the American output to the limit. This will temporarily cause a bullish market which, however, may re-adjust itself, providing American labour difficulties are settled in the near future.

THE DEPARTMENT OF OVERSEAS TRADE is now engaged in compiling the division of the Index which includes chemicals, drugs, &c., engineering metal trades, fancy goods, instruments (all classes), machinery (all classes), metals and alloys. If any manufacturer of goods connected with either of these trades interested in export and desirous of having his name included in the Index has not yet received a form, he should apply immediately to the Department of Overseas Trade, Trade Index Block, 4, Queen Anne's Gate Buildings, S.W. 1. The Index is for official use only, and is not intended for publication. Advertisements cannot be inserted.

AT THE SECOND ANNUAL DINNER of the Sheffield Association of Metallurgists and Metallurgical Chemists, held at the Royal Victoria Station Hotel on Friday, November 15, Mr. W. H. Hatfield (D.Met.) in proposing the toast of "Applied Science," said that science was simply knowledge systematically arranged and that applied science was that applied. Every man in the steel works of Sheffield who worked intelligently and attempted improvements was an applied scientist. In the present state of the world, Labour misconstrued the position as regards economies. The real position was that, owing to science a higher standard of existence was within reach, providing the whole of the population would put their backs into their work and produce as much as possible. That was the solution of the present trouble.

EXTENSIVE COLLIERY DEVELOPMENTS involving an increased output of thousands of tons are being entered upon in the Bridgend district, an important mining centre in South Wales. At Cwm Cedfw, the County Colliery Company are opening out two levels. When the colliery is developed, it is expected that 1,500 men will be employed there. A new drift is being sunk at Tondu, close to the colliery offices, and at the Old Park Slip. Developments are also taking place at Gellihir, which formerly belonged to the late Mr. Oliver H. Thomas, a new seam having been discovered which is regarded as valuable. At Messrs. Baldwins' two main pits, about 500 yards to the west of Aberbaidan Colliery and Kenfig Hill, further extensions are to take place, and Messrs. Baldwins are also to sink two pits near Watwr Street. Three pits are being sunk by the Meires Colliery Company at Weru Torw. Operations have begun, but great difficulty has been found in regard to houses, for when these pits are developed it is estimated that they will employ between 2,000 and 3,000 men.

Chemical Matters in Parliament

Trade with Germany

In reply to Mr. A. Short (House of Commons, November 10), Sir A. Geddes issued a statement showing the total value of the imports from Germany into the United Kingdom and of exports from the United Kingdom to Germany during the period November 11, 1918, to October 31, 1919. The statement includes:—Imports: Potash compound (other than manure), £53,780; and manures, £29,269. Exports of produce and manufactures of the United Kingdom: Linseed oil, £1,613,396; rape seed oil, £206,499; and soap, £480,437. Exports of foreign and colonial produce and manufactures: Oils, animal and vegetable, £111,054.

Coal Carbonisation

Mr. Atkey asked the Parliamentary Secretary to the Ministry of Munitions (House of Commons, November 12) if he were aware that the Director of Steel Production compiled statistics showing the amount of coal carbonised, both in patent by-product ovens and in beehive ovens, in the years 1917 and 1918; and whether he would now publish these figures for each method of carbonisation?

Mr. Hope: The only figures available are those for the production of metallurgical coke for the years 1916, 1917, and 1918; these will afford some indication of the amount of coal carbonised in coke ovens during those years. The figures are as follows:—1916, 13,422,195 tons; 1917, 13,801,607; 1918, 13,277,007. The subdivision between by-product, beehive, and retort ovens can only be given for the year 1917, and is as follows:—By-product, 10,866,673 tons; beehive, 2,411,244; retort, 523,690.

Motor Spirit

Sir A. Geddes, replying to Mr. Doyle (House of Commons, November 13), stated that an order made under the Profiteering Act on October 2 fixing maximum prices for motor spirit was revoked on October 14. There had been no change in prices, so far as he was aware, since that date. Stocks had slightly increased. The statement that petrol is delivered to this country at 1s. 9½d. per gallon, inclusive of cost, insurance, freight, and the Government tax of 6d., appeared to be approximately correct. Motor spirit had been declared an article to which the Profiteering Act applies.

Feeding Stuffs and Fertilisers

Mr. Sitch asked the Parliamentary Secretary to the Board of Agriculture (House of Commons, November 13) whether his attention had been drawn to the last report issued by the chemical department of his Board, wherein certain feeding stuffs, fertilisers, and other materials required in agriculture had been proved on analysis by Dr. J. A. Voelcker to be more or less valueless for the purpose they were advertised and sold to serve, and that in one instance alone the cost was more than four times what the material was worth; and whether, assuming the duty of the Board to be the protection of those engaged in agriculture, he proposed to allow the sale of these deceptive materials to continue without warning purchasers against them?

Sir A. Boscawen: There is no report issued by the Board of Agriculture of the kind referred to by the hon. member. The results of analyses made by Dr. Voelcker of certain feeding stuffs and fertilisers are published annually in the *Journal of the Royal Agricultural Society of England*. Protection against fraudulent sales of fertilisers and feeding stuffs is provided by the Fertilisers and Feeding Stuffs Act of 1906. Under this Act, sellers are required to give a description of these materials, where necessary indicating their agricultural value. A false description to the prejudice of the purchaser constitutes an offence under the Act. The Board are now considering to what extent the Act should be amended with a view to giving greater protection to the farmer. The Board have repeatedly warned users of manures against the purchase of inferior or worthless articles at excessive prices, and have published a leaflet on the subject, a copy of which I am sending to the hon. member. Prices of fertilisers are not controlled by law; prices and distribution of feeding stuffs continue for the present under the administration of the Food Controller.

Restrictive Duties on Vegetable Oils

In reply to Lieut.-Commander Kenworthy (House of Commons, November 12), who asked whether the present restrictive duties on the export of raw materials for vegetable oils would be applied to the mandatory areas granted to this country under the covenant of the League of Nations; if so, whether the House would be given an opportunity of discussing this departure from the historic policy of Great Britain of recognising the rights of native races to sell their produce in the open markets of the world; whether the League of Nations aspect of this question had been fully considered; and whether an appeal by dissatisfied producers in these mandatory areas to the Council of the League of Nations would be permitted by His Majesty's Government?

The Under-Secretary of State for the Colonies (Lieut.-Colonel Amery) stated: The hon. member is incorrect in his assumption that there are restrictive duties on the export of the raw material for vegetable oils generally, but I presume he is referring to the special case of palm kernels exported from the West African Colonies, on which product there is a differential export duty of £2 a ton on kernels exported outside the Empire. In any case, the answer to the first part of his question is in the negative; the rest consequently does not arise.

German Dyes

In reply to Major McKenzie Wood who asked the President of the Board of Trade (House of Commons, November 17) if he were aware that German dyes were moving freely into France, Belgium, Holland, and the United States; and that British dye-users were losing trade to foreign competitors through being compelled to import their dyes through a Government Department, Sir A. Geddes stated that the export of dyes from the occupied territory of Germany, in which the German dye-making works were chiefly situated, was allowed only under licence from the Inter-Allied Rhineland Commission. The importation of German dyes into France and the United States was permitted only under licence. As regards importation into this country, he referred Major McKenzie Wood to the announcement which appeared in the Press on November 13 as to the steps which were being taken to safeguard the interests of consumers.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 4, Queen Anne's Gate Buildings, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

Locality of Firm or Agent.	Materials.	Ref. No.
Australia	Sulphate of Copper. Particulars from Department of Overseas Trade (Development and Intelligence), 73, Basinghall Street, E.C. 2.	32,747
Canada		
(St. Johns) ..	Linseed Oil	1,031
(Ontario) ..	Quicksilver	—
(Montreal) ..	Oils, Chemicals, Drugs. Replies to Canadian Government Trade Commissioner's Office, Portland House, 73, Basinghall Street, E.C. 2.	
New Zealand ..	Glass Bottles (chemists' and packers' bottles particularly).	1,034
Belgium (Brussels) ..	Boot Polish	1,042
Netherland (East Indies)	Glass Bottles	1,059
Spain (Barcelona)	Chemical and pharmaceutical products, dyes, paints and varnishes.	
Belgium (Brussels)	Drugs and pharmaceuticals.	
Italy	Note.—The following list of requirements has been received at the British Chamber of Commerce for Italy, 7, Via Carlo Felice, Genoa. All communications regarding the inquiries should be sent to the Secretary of the Chamber.	
Genoa	Chemical products	1735
Genoa	Chemical and mineral products ..	1740
Fiume	Chemical products	1751
Fiume	Chemical products	1753
Genoa	Chemical products, dyes, &c. ..	1761
Turin	Chemical products, dyes, &c. ..	1764
Pontedere ..	Pharmaceutical products, dyes, and chlorides.	1768
Prato, Tuscany ..	Chemical products and dyes. ..	1778
Genoa	Chemical products, oilseed	1781
Genoa	Seed oils, oils, oleo, and chemical products	1793
Genoa	Chemical products	1798

Contracts Open

Portland Cement.—For Brighton Town Council. Particulars from Borough Surveyor, Town Hall, Brighton. Tenders by 10 a.m., December 5.

Oilmen's Stores and Goods.—For the Gravesend Education Committee. Particulars from the Town Clerk's Office. Tenders by 10 a.m., December 1.

Tar (200,000 gallons).—For the Roads and Bridges Committee of the West Sussex County Council. Persons tendering should give the following particulars: (*a*) Specific gravity; (*b*) percentage of water ammonia and free carbon; (*c*) percentage of tar produced in the manufacture of carburetted water gas. Tenders must reach Mr. H. W. Bowen, M.I.C.E., county surveyor, North Street, Horsham, by December 1.

Railway Stores.—(34) cement; (2) colours; (3) drysalteries; (27A) glass, sheet and plate. For the directors of the Great Southern and Western Railway Co., Dublin. Particulars (6d.) from the Stores Superintendent, General Stores Dept., G.S. & W.R., Inchicore, Dublin. Tenders by 10 a.m., November 26.

References to Current Literature

Only articles of general as distinct from specialised interest are included and given in alphabetical order under each geographical subdivision. By publishing this digest within two or three days of publication or receipt we hope to save our readers time and trouble; in return we invite their suggestions and criticisms. The original journals may be consulted at the Patent Office or Chemical Society's libraries. A list of journals and standard abbreviations used will be published at suitable intervals.

British

BOILERS. Boiler firing with coke. *Gas World*, November 15, 382-383. Notes on current practice in England and in Germany.

CORROSION. The corrosion of iron and steel. H. B. Weeks. *Engineering*, November 14, 662. Abstract of Presidential Address to the Barrow Society of Engineers.

GAS. The sale of gas on the basis of its heating value. *J. Soc. Chem. Ind.*, November 15, 407-408R.

GERMANY. Notes on the Rhineland chemical works. Part I. J. Allan. *J. Soc. Chem. Ind.*, November 15, 408-410R. The author deals with the main factors in the development of German chemical industry.

NICOTINE. The examination of commercial samples of nicotine. P. J. Fryer and C. H. Fryer. *Analyst*, November, 363-369. A paper of especial value to the manufacturer of insecticides, etc.

ORES. A contribution to the study of flotation. H. L. Sulman. *Bull. Inst. Min. Met.*, November, 1-95. A useful discussion of the principles underlying the now recognised practice in ore flotation.

SAWDUST. Sawdust. J. Pike. *Pharm. J.*, November 25, 431. Notes on uses for sawdust, particularly in pharmacy.

SULPHUR. Observations on the solubility of sulphur in various solvents. R. F. Innes. *J. Soc. Leather Trades Chem.*, September, 126-127. Experiments have been made with carbon bisulphide, ether, petroleum spirit, carbon tetrachloride, and chloroform.

Colonial

The position of the chemist in South Africa. J. Gray. *J. Chem., Met., and Min. Soc. S. Afr.*, September, 23-29. In the Presidential Address to the Society, the necessity for raising the status of chemists is urged.

American

WATER. Feed water treating and purifying plant of the Republic Iron and Steel Co., Youngstown, Ohio. S. H. McKee. *Proc. Eng. Soc. W. Penna.*, July, 283-309. A full description of the plant and its operation is given.

French

DISTILLATION. Rectification by adiabatic condensation without expansion. E. Chenard. *Bull. Soc. Chim.*, October, 546-552. An interesting experimental study of the subject.

ETHER. Catalytic preparation of ether by the dry process. A. Mailhe and F. Godon. *Bull. Soc. Chim.*, October, 565-568. The catalyst used was prepared by calcining ordinary alum at a low temperature.

MAGNESIA. Purification of magnesia: Conditions of formation of periclase or crystalline magnesia. J. Meunier. *Bull. Soc. Chim.*, October, 560-562.

POISONING. Detection of hydrocyanic acid in cases of poisoning, and its conversion after death into thiocyanic acid. L. Chelle. *Comptes rend.*, November 10, 852-854. It is shown that hydrocyanic acid is converted into thiocyanic acid a short time after death.

German

AMMONIA. Ammonia as a by-product of the carbonisation of coal. F. Dörner. *J. Gasbeleucht*, October 11, 608-609. A general paper on the subject.

COPPER. Electrolytic determination of copper in pyrites and pyrites cinders. E. Mengler. *Chem. Zeit.*, October 25, 729.

FATS. The chemistry and industry of fats in 1914-1918 A. Grün. *Chem. Zeit.*, October 28, 737-739. This instalment deals with the constituents of fats and waxes. (See also CHEMICAL AGE, p. 601.)

FRACTIONATION. Comparative studies of fractionating columns at constant rate of distillation. J. Friedrichs. *Z. angew. Chem.*, October 28, 340-344. A mixture of benzol and toluol was fractionated, using eighteen different columns.

GAS. New gas analysis apparatus for the laboratory or works. M. Bürgerhausen. *Chem. Zeit.*, October 25, 731.

MINERAL OILS. The characterisation of burning oils, especially benzine, by means of picric acid. J. Tausz and E. Schnabel. *Chem. Zeit.*, October 23, 726.

TAR. The characterisation of tars. F. Fischer. *Z. angew. Chem.*, October 28, 337-340. The author deals with the differentiation of tars (both coal tars and lignite tars) when treated from the original tars.

URANIUM. Colorimetric estimation of small quantities of uranium. Müller. *Chem. Zeit.*, October 28, 739-740.

Koppers Coke Ovens and By-Products

High Court Action over German Patents

THE hearing was concluded on Tuesday of an action brought in the Chancery Division by Albert Victor Derry, a partner in the firm of W. Edward Kochs & Co., colliery machinery experts, of Sheffield, for the dissolution of a partnership between that firm and Heinrich Koppers, of Essen, created by an agreement of April 17, 1902. It raised the question whether patents taken out by Koppers for coke ovens and by-products plant belonged to the firm or to Koppers, and whether under certain Orders made by the Board of Trade vesting these patents in the Public Trustee as Custodian, the Custodian held them absolutely or as trustee for the partnership.

The partners in the firm of W. Edward Kochs & Co. were Mr. Derry, an English-born subject, whose name was formerly Kochs, and Mr. Charles Rudolf Altenheim, a German subject, who was interned during the war in the Isle of Man. Koppers was a German subject resident in Germany, who had taken out a number of patents for coke ovens and plant for recovering by-products, some of which have now expired, but many are still in existence. These patents were taken out in England and many other countries. The agreement of 1902 only related to business in connection with the ovens and plant in the United Kingdom, and Koppers therein made over all his experience and improvements to the company. Koppers was to take one-half of the profits, and the other half was divided between Derry and Altenheim. The partnership carried on business under the name of the Koppers Coke Ovens and By-Products Co. It was alleged by the partners that under the arrangement between them all English patents taken out by Koppers belonged to the partnership.

After the outbreak of war, in October, 1914, the Board of Trade, under the Trading with the Enemy Act, 1914, appointed Mr. T. E. Shuttleworth, the accountant of the firm, controller to carry on the business of the partnership, and he still carried on the business. On October 18, 1917, the Board of Trade, under the Trading with the Enemy Amendment Act, 1916, ordered that the benefit of the patents in England of Koppers, who was then an enemy alien, which were enumerated in the Order should vest in the Public Trustee as Custodian. Large profits had been made during the war. On July 30, 1918, Derry began this action against Altenheim and Koppers, claiming that the partnership was dissolved at the outbreak of war, and that the patents which were enumerated in the statement of claim belonged to the partnership, and that the business might be wound up by the Court. On November 28, 1918, the Public Trustee was added as a defendant. The plaintiff and the defendants all claimed that the patents belonged to the partnership, and were held by the Public Trustee as trustee for the partnership.

By two Orders of the Board of Trade of April 8, 1919, the respective shares and interests of Koppers and Altenheim in the partnership were vested in the Custodian. The Public Trustee as Custodian submitted that the English patents would all, but for the vesting Orders, be the property of Koppers, and were now vested in the Public Trustee absolutely.

Mr. Justice Russell reviewed the circumstances at length, and held as a fact that the patents, though in Koppers' name, had throughout belonged in equity to the partnership.

Patent Literature

We publish each week a list of selected complete specifications accepted as and when they are actually printed and on sale. In addition, we give abstracts within a week of the specifications being obtainable. Readers can thus decide what specifications are of sufficient interest to warrant purchase, the only way of obtaining complete information. A list of International Convention specifications open to inspection before acceptance is added, and abstracts are given as soon as possible.

Abstracts of Complete Specifications

121,591. METALS, SEPARATION AND REFINING OF. G. Haglund, 1, Bygdö Allé, Christiania. International Convention date (Norway), December 19, 1917.

Matte obtained from the smelting of copper-nickel ores is roasted and reduced, and the resulting mixture of metallic copper and nickel is granulated. The metal is treated with sulphuric or other acid, and the neutral solution formed is left in contact with the metal until the electronegative copper is deposited, leaving a pure nickel sulphate solution. This solution is electrolysed in a diaphragm cell, using an insoluble anode, so that metallic nickel is deposited on the cathode and sulphuric acid formed in the anode cell. The sulphuric acid may be used for treating a further quantity of metal. A number of such cells may be used and the nickel sulphate solution may be first passed through the cathode compartment, and then divided into two parts, one of which is passed through the anode compartment and the other mixed with the solution entering the cathode compartment. In a modification, the neutral solution of mixed sulphates may be obtained by treating the mixed sulphides with sulphuric acid. The process may also be used for the separation of mixtures of other metals, such as silver, bismuth, antimony, copper, cobalt, nickel, iron, cadmium, or zinc.

122,397. PYRIDINE AND SIMILAR ORGANIC BASES, RECOVERY OF. The Barrett Co., 17, Battery Place, New York, Assignees of F. E. Dodge, 20, South Seventeenth Street, Flushing, New York, and F. H. Rhodes, 225, East Mount Pleasant Avenue, Mount Airy, Philadelphia, Pa.; U.S.A. International Convention date (U.S.A.), January 17, 1918.

The crude ammonium sulphate liquor obtained from gas purifiers either by the direct or semi-direct method is removed from the saturator before the amount of pyridine is sufficiently large to contaminate the ammonium sulphate. Ammonia gas is then passed through the liquor until the free acid is neutralised and the pyridene sulphate converted into ammonium sulphate with liberation of the pyridene bases. The solution is then distilled until all the pyridine is driven over, and the distillate is saturated with ammonia gas, which causes the pyridine bases to separate as a distinct superimposed layer which may be drawn off.

123,715. PULVERISING MILLS. Sturtevant Mill Co., Park and Clayton Streets, Harrison Square, Boston, Mass., Assignees of T. J. Sturtevant, Wellesley Farms, Mass., U.S.A. International Convention date (U.S.A.), February 23, 1918.

A mill for crushing rock, fertiliser, minerals, &c., consists of a casing having a semi-cylindrical bottom composed of spaced parallel horizontal bars. The material is crushed between the bars, and a set of revolving hammers attached to a horizontal shaft concentric with the cylindrical bottom. The crushing bars are mounted in two separate frame members carried on a vertical hinge, so that they may be swung apart to open the casing.

126,944. PARANITRACETANILIDE, PROCESS FOR DECOMPOSING—TO FORM PARANITRANILINE. M. K. K. Kaisha, 1, Suruga-cho, Nihonbashi, Tokio, Japan. International Convention date (Japan), May 16, 1918.

Paranitracetanilide is mixed with caustic alkali, alkali carbonate, calcium carbonate, or lime, to neutralise the acetic acid produced by the decomposition, and heated for some time under a pressure of 20 to 40 lb. per square inch. Pure paranitraniline crystallises out on cooling. In a modification the heating may be effected by high-pressure steam passed through the liquid, less water being used to allow for condensation.

133,753. MAGNESITE REFRACTORIES, METHOD OF MANUFACTURING. R. D. Pike, 74, New Montgomery Street, San Francisco, Cal., U.S.A. Application date, October 14, 1918.

Uncalcined magnesite, which when calcined would yield about 90 to 95 per cent. of magnesia, is broken and ground up with water and with 0.32 to 0.75 per cent. of its weight of powdered ferro manganese and 1.5 to 2.5 per cent. of its weight of iron oxide, Fe_2O_3. The plastic mass is moulded into bricks, which are dried and then fired. The product is a dense, hard compound, containing 89 to 92 per cent. of magnesia and 8 to 5 per cent. of iron. The bricks may be crushed and ground with water again, and the plastic material again moulded into bricks, dried, and fired. The effect of the addition of the iron alloy and iron oxide is to act as a deoxidiser upon the ferric oxide in the magnesite, the resulting ferrous oxide and metallic iron acting as a better binding agent. Calcined magnesite may alternatively be used, and the ferro manganese may be replaced by ferro-silicon.

133,759. DECOLORISING AND PURIFYING AGENTS AND METHODS OF MAKING THE SAME. R. W. Mumford, 3,502, Fairview Avenue, Baltimore, Md., U.S.A. Application date, October 14, 1918.

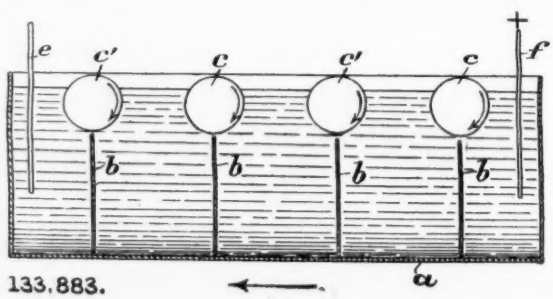
Vegetable carbonaceous material, such as sawdust, peat, lignite, residues from alcohol distillation, cellulose, &c., is comminuted, mixed with colloidal solution, such as gelatinous tricalcium phosphate, potato flour, or starch, or the like, and with a mineral such as dolomite, finely ground. The mixture is dried and slowly heated up to 800° C. Gas is continuously evolved during the heating, and a porous carbon is produced which is particularly suitable for purifying and decolorising substances such as sugar. The carbon may be freed from impurities absorbed when in use by washing with a solution of caustic soda followed by hydrochloric acid.

133,769. PHOTOGRAPHIC MATERIALS, COLOUR-SENSITISED. F. F. Renwick, Sunnyside, Weald Road, Brentwood, Essex, and O. Bloch, 44, Finsbury Square, London, E.C. 2. Application date, October 15, 1918.

It is found that if a dye of the auramine or iminodiphenyl methane class (*i.e.*, substitution derivatives of benzophenoneimide) is added to a light-sensitive emulsion in very small quantity the emulsion becomes strongly sensitive to the blue region of the spectrum.

133,883. CHEMICAL PROCESSES BY ELECTROLYSIS, DEVICES FOR CARRYING OUT. V. Gerber, 154, Klosbachstrasse, Zurich, Switzerland. Application date, February 20, 1919.

In electrolytic chemical processes mercury has been used as a travelling intermediate electrode to avoid the use of a porous diaphragm. The invention consists in the use of a travelling intermediate electrode of metal other than mercury. A long trough *a* is divided into a number of cells by non-conducting walls *b*, which do not extend to the full height of the trough. Rotary metal rollers *c*, *c*¹, are arranged above the partitions, and ordinary electrodes *e*, *f*, of iron and carbon may be provided.



133,883.

During the rotation of the rollers the part immersed in one compartment acts as an anode, and then as a cathode when transferred to the adjacent compartment. The deposited anion forms with the material of the roller a compound which is substantially insoluble in water, and this compound is then transported into

the adjoining compartment. The apparatus is slightly modified when it is required to act with a continuous flow, and several examples are given of the reactions taking place with different solutions in the various compartments and correspondingly selected metals for the rollers.

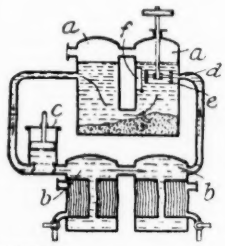
133,918. Nitro-naphthalene, Process for Manufacturing. E. de B. Barnett, 9, Collingham Road, London. S.W. 5. Application date, May 17, 1919.

One hundred and twenty eight parts of naphthalene are suspended in 450 parts of dilute sulphuric acid of 65 per cent. strength. The mixture is stirred, and a mixture of 95 parts of nitric acid of 70 per cent. strength, and 140 parts of strong sulphuric acid of 95 per cent. strength, is slowly run in while the temperature is kept at 25° to 30° C. The temperature is then raised to 65° to 70° C. for one hour. The nitro-naphthalene is then separated from the acid by any known means. The spent acid thus recovered may be used for suspending a fresh quantity of naphthalene, either alone or in admixture with fresh sulphuric acid.

International Specifications Open to Inspection

132,771. Evaporating Solutions. P. Piccard, 26, Chemin Schaub, Geneva. International Convention date, September 14, 1918.

The solution is forced by a pump *c* through a pair of heaters *b* in series, where it is heated under pressure, and then through a converging nozzle *d* into an evaporator *a*, where its pressure is



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suddenly reduced. The jet of solution is caused to impinge on a solid body *e*, so that crystals are continuously deposited on it. The solid body *e* may be cylindrical and may be rotated, so that the crystals are removed by the stationary scraper *f*. Alternatively the solid body may be fixed, and the scraper movable.

Latest Notifications.

134,810. Electrical furnaces. F.I.A.T. Soc. Anon. November 2, 1918.

134,815. Fatty emulsions, Method of cooling or for allowing to crystallise. K. Erslev. November 7, 1918.

134,825. Sulphide ores, Roasting of—preparatory to leaching. Electrolytic Zinc Co. November 7, 1918.

Specifications Accepted, with Date of Application

8,031/1914. Choline and its Higher Homologues, Manufacture of Salts or Compounds of. Johnson (*Vereinigte Chemische Werke Akt.-Ges.*). March 30, 1914.

112,268. Water-Gas Producers. Compagnie pour la Fabrication des Compteurs et Materiel d'Usines à Gaz. December 19, 1916.

120,724. Cellulose Manufacture, Dry Distillation with Strong Bases in the Presence of Steam of the Waste Liquors of. E. L. Rinman. November 8, 1917.

125,935. Electrolysis of Alkaline Chlorides, Apparatus with Horizontal Diaphragm for. Norsk Alkali Aktieselskabet. April 25, 1918.

128,553. β-halogen-ethylaminobenzoic esters, Process for the Manufacture of. Soc. Chimique des Usines du Rhone. June 20, 1918.

128,554. β-alkylamino-ethylaminobenzoic alkyl esters. Soc. Chimique des Usines du Rhone. June 20, 1918.

128,912. Benzoic Acid Esters, Manufacture of new Substituted. Soc. Chimique des Usines du Rhone. June 26, 1918.

129,962. Heat Treatment of Chemical Compounds, Apparatus and Method for. F. X. Govers. July 18, 1918.

133,987. Gas Washer. Simon-Carves, Ltd., and J. H. Brown. September 19, 1918.

133,989. Paraffin Waxes, Oils, or Fats from Peat, Peat Straw, Mosses, Lichens, Algae, Grass, Straw, Pine-needles, and the like, Production of. K. H. V. von Porat. September 21, 1918.

134,015. Sulphuric Acid, Process and Apparatus for Producing. H. V. Welch. October 22, 1918.

134,113. Producer-gas, Generation of. H. W. Bamber and E. G. Goldsmid-Abrahams. December 23, 1918.

134,144. Acetone and Carbonic Acid, Processes for the Manufacture of. Soc. Anon. des Acieres et Forges de Firminy. November 16, 1918.

134,155. Hydrogen, Means for Treating Spathic Iron Ore to render it suitable for use in the manufacture of. W. J. Bates and W. R. Bates. March 13, 1919.

134,169. Furnaces. H. Wade. (*Fours et Procédés Mathy Soc. Anon.*) May 3, 1919.

Patents Court Cases

Official announcement is made of the grant of licences by the Public Trustee under the Trading with the Enemy Acts, 1914 to 1918, to Messrs. Brunner, Mond & Co., in respect of the following Patents:—17,642/1909, 17,951/1909, 19,240/1910, 19,778/1910, 5,833/1911, 5,835/1911, 21,151/1911, 28,167/1911, and 14,509/1913 (all Badische Anilin and Soda Fabrik); and 14,023/1910 (F. Haber). All these relate to the manufacture of ammonia.

Licences are also granted to Morton Sundour Fabrics, Ltd., in respect of the following patents:—4,235/1907, 9,657/1907, 7,923/1910, and 15,205/1911 (Badische Anilin & Soda Fabrik), and 11,032/1909 (Farbenfabriken vorm. F. Bayer & Co.), all for colouring matters of the anthracene series; also 12,828/1910 (Akt.-Ges. für Anilin Fabrikation), dyestuffs of the anthraquinone series; 4,158/1911 (Akt.-Ges. für Anilin Fabrikation), acidylated sulphurised anthraquinone derivatives; 12,010/1911 (Chemische Fabrik Griesheim-Elektron), new anthraquinone derivatives; 13,019/1912 (Akt.-Ges. für Anilin Fabrikation), 1-4—diamino-anthraquinone compounds; 5,534/1913 and 14,360/1914 (Badische Anilin and Soda Fabrik), colouring matters of the anthraquinone series; 8,917/1914 (Akt.-Ges. für Anilin Fabrikation), Amino-quinones; 12,237/1914 (Akt.-Ges. für Anilin Fabrikation), Thio-ureas of the anthraquinone series

New Hot Spring in Derbyshire

At the village of Ridgway, in the Birley and Norton valley, near Sheffield, where borings for oil have been in progress for several months past, it is stated that a flow of warm spring water has issued from the moor. This has been sunk to a depth of 966 yards without reaching a stratum of oil, but the release of the water has created considerable interest in the neighbourhood on account of a possible medicinal value. Unofficial tests of the water are stated to show the presence of about 300 grains of salt to the gallon, in addition to a proportion of sulphates and chlorides, iron and lime. It is considered that there may also be a yield of magnesia. Discussing the discovery with a representative of the *Yorkshire Post*, Professor W. H. Kendall, of Leeds University, said that the association of hot springs with oil borings was not uncommon. In Trinidad, which was one of the important oil-yielding places, there were even volcanic eruptions, and in Persia hot water was frequently encountered. Ridgway would doubtless be a mineral spring, because water at a high temperature possessed a remarkable power of dissolving minerals. It was also probable that the temperature of the water was due to chemical reactions taking place inside the earth. The temperature of the earth's crust in England increased roughly by one degree for every 50 feet of descent, and in Derbyshire the mean annual temperature of rocks near the surface was about 47° or 48° Fahrenheit. If the Ridgway spring had a surface temperature of 122° or 132°, it would give an exceptionally high temperature at the bottom of the bore. It was known that Derbyshire was underlaid to a very large extent with volcanic rocks of considerable thickness. Because the water was hot was, of course, no assurance that it had therapeutic qualities. The most notable of medicinal waters were cool, and at Harrogate the temperature of the springs was about 47°.

The Bermondsey Profiteering Committee ordered Boots Cash Chemists, Ltd., to refund 5d. to a customer who bought a 1s. bottle of nursery hair lotion at their shop in Southwark Park Road. When the purchaser took the bottle home there was found under the outside label, another one with 7d. as the price of the lotion. Mr. Sparke, London manager of the company, stated they were entirely in the hands of the manufacturers, who had increased the retail price which was fixed by them. The Committee instructed that the firm should be prosecuted. Notice of an appeal against the decision was given.

Market Report and Current Prices

Our Market Report and Current Prices are exclusive to THE CHEMICAL AGE, *and, being independently prepared with absolute impartiality by Messrs. R. W. Greeff & Co. and Messrs. Chas. Page & Co., Ltd., may be accepted as authoritative. The prices given apply to fair quantities delivered ex wharf or works, except where otherwise stated. The weekly report contains only commodities whose values are at the time of particular interest or of a fluctuating nature. A more complete report and list are published once a month. The current prices are given mainly as a guide to works managers, chemists, and chemical engineers; those interested in close variations in prices should study the market report.*

Market Report

THURSDAY, November 20, 1919.

BUSINESS continues very active, with a brighter tendency in the home trade demand, and makers are well sold.

There are only a few variations in prices to report.

The export demand remains very active, and a large number of orders have to be refused, owing to the heavy commitments of makers.

General Chemicals

ACID ACETIC is very active, and with restricted imports the market is firmer.

ACID CARBOLIC.—The price is well maintained at recent figures, and good business is passing.

ACID FORMIC is slightly easier in price, but supplies are still scarce.

ACID OXALIC is much firmer in price, and expected foreign arrivals have not materialised.

ARSENIC is better, and spot supplies are difficult to obtain.

BARIUM SALTS.—There is little change in the position. Business is on the quiet side. Chloride is again easier.

COPPER SULPHATE.—There is a shade more inquiry, and price is inclined to be the " turn " higher.

EPSOM SALTS.—Makers are actively engaged, and price is steady at recent figures.

FORMALDEHYDE.—There is no movement in price to report, but the material is practically unobtainable on the spot.

LEAD ACETATE is in much better demand, and slightly higher prices have been realised.

LITHOPONE is very steady, supplies being readily absorbed on arrival. Price is without change.

POTASSIUM PRUSSIATE.—English makers are well occupied with orders, and there is only a limited amount of foreign material arriving. Price is very firm.

SODIUM ACETATE is in good request, without change in price.

SODIUM BICHROMATE.—Considerable business has been done for 1920 account at the price which was fixed last week.

SODIUM CAUSTIC.—Makers are fully sold for near delivery, and high prices are being obtained on export account for re-sale parcels.

SODIUM HYPOSULPHITE is active, and supplies are difficult to obtain for near delivery.

SODIUM NITRITE is scarce on the spot and price is firm.

SODIUM PHOSPHATE is in better request, and price is firmer.

SODIUM PRUSSIATE.—There is no change in the position, and there is practically nothing obtainable for spot delivery.

STRONTIUM SALTS are more active, with a fair demand for carbonate and nitrate.

TIN SALTS.—The demand is on the quiet side, but with higher prices for metal, an upward tendency is noticeable.

Coal Tar Intermediates

This market remains active, but for most products works are now unable to give near delivery, and prices in some cases still tend to advance.

ALPHA NAPHTHYLAMINE is moderately active, without change in value.

ANILINE SALT is unobtainable on the spot, and price is again advanced for forward delivery.

BETA NAPHTHOL.—Manufacturers continue well occupied in this material.

DIMETHYLANILINE.—Good business has been transacted in this product at current prices.

NAPHTHIONATE OF SODA.—Several large orders have been placed, and manufacturers are well occupied with business.

Heavy Coal Tar Products

The market is firm and fairly active.

BENZOL (90 per cent.).—There is more demand for export, but the quantity available is extremely limited, and the price quoted to-day is 2s. 2d. to 2s. 3d. per gallon, f.o.b. East Coast ports.

CRESYLIC ACID.—The demand continues good, and 2s. 6d. per gallon naked at works for 97/99 per cent. has been paid, while 95/97 per cent. is quoted at 2s. 4d. per gallon.

CREOSOTE OIL.—There is still a good demand both for export and home trade. Prices are 6¼d. to 6½d. per gallon in the North and 7¼d. to 7½d. per gallon in the South.

NAPHTHALENE.—There is more demand for flake naphthalene, and business has been done at £20 per ton, while crystals are quoted £19 to £20 per ton. Crude naphthalene is worth £6 to £9 per ton, according to quality.

SOLVENT NAPHTHA.—The demand is good, and there are buyers at 2s. 7d. to 2s. 8d. per gallon delivered.

HEAVY NAPHTHA.—There is rather more activity, and to-day's price may be taken at 2s. 3d. to 2s. 5d. per gallon.

PITCH.—There is a good demand for both prompt and forward delivery, and as high as 77s. 6d. f.o.b. East Coast has been paid. A great part of the production for the coming season has been taken up, and makers are by no means free sellers.

Sulphate of Ammonia

SULPHATE OF AMMONIA.—There is an improved demand for this material, and the production is absorbed without difficulty. The position with regard to exports remains unchanged, and it is anticipated that very little will be available during the next few months.

NITRATE OF SODA is steady at 21s. to 22s. per cwt.

Alsatian Potash Imports

IMPORTS for the week ending November 15, 2,193 tons Sylvinite 20 per cent., and 4,471 tons Sylvinite 14 per cent. Prices:—Sylvinite 14 per cent. (French kainit), £7 per ton; Sylvinite 20 per cent. (French potash salts), £8 7s. 6d.; Muriate of Potash, 80 per cent., £19 7s. 6d.

Current Prices

Chemicals

	per	£	s.	d.		£	s.	d.
Acetic anhydride	lb.	0	2	9	to	0	3	0
Acetone, pure	ton	90	0	0	to	95	0	0
Acid, Acetic, glacial, 99-100%	ton	83	0	0	to	85	0	0
Acetic, 80% pure	ton	65	0	0	to	67	10	0
Carbolic, cryst. 39-40%	lb.	0	0	9	to	0	0	9½
Citric	lb.	0	4	3	to	0	4	4
Formic, 80%	ton	105	0	0	to	110	0	0
Lactic, 50 vol.	ton	70	0	0	to	72	0	0
Lactic, 60 vol.	ton	85	0	0	to	87	10	0
Oxalic	lb.	0	1	1½	to	0	1	2
Acid, Pyrogallic, cryst	lb.	0	11	6	to	0	11	9
Tannic, commercial	lb.	0	3	0	to	0	3	3
Tartaric	lb.	0	3	2	to	0	3	3
Alum, lump	ton	18	0	0	to	18	10	0
Aluminium, sulphate, 14-15%	ton	15	0	0	to	15	10	0
Aluminium, sulphate, 17-18%	ton	18	10	0	to	19	0	0
Ammonia, anhydrous	lb.	0	1	9	to	0	2	0
Ammonia, .880	ton	32	10	0	to	37	10	0
Ammonia, carbonate	lb.	0	0	6½	to			
Ammonia, muriate (galvanisers)	ton	44	0	0	to	45	0	0
Ammonia, nitrate	ton	45	0	0	to	50	0	0
Ammonia, phosphate	ton	115	0	0	to	120	0	0
Arsenic, white, powdered	ton	60	0	0	to	62	0	0
Barium, carbonate, 92-94%	ton	13	0	0	to	14	0	0
Chloride	ton	21	0	0	to	22	0	0
Nitrate	ton	50	0	0	to	51	0	0
Sulphate, blanc fixe, dry	ton	25	10	0	to	26	0	0
Sulphate, blanc fixe, pulp	ton	15	10	0	to	16	0	0
Bleaching powder, 35-37%	ton	17	10	0	to	18	0	0

	per	£	s.	d.		£	s.	d.
Borax crystals	ton	39	0	0	to	40	0	0
Calcium acetate, grey	ton	23	0	0	to	25	0	0
Chloride	ton	9	0	0	to	9	10	0
Casein, technical	ton	80	0	0	to	83	0	0
Cobalt oxide, black	lb.	0	7	9	to	0	8	0
Copper sulphate	ton	40	0	0	to	41	0	0
Cream Tartar, 98-100%	ton	245	0	0	to	250	0	0
Epsom salts (see Magnesium sulphate)								
Formaldehyde 40% vol	ton		—			165	0	0
Iron perchloride	ton	32	0	0	to	34	0	0
Iron sulphate (Copperas)	ton	4	10	0	to	4	15	0
Lead acetate, white	ton	83	0	0	to	85	0	0
Carbonate (White Lead)	ton	53	0	0	to	55	0	0
Nitrate	ton	60	0	0	to	63	0	0
Lithophone, 30%	ton	44	0	0	to	46	0	0
Magnesium chloride	ton	15	0	0	to	16	10	0
Carbonate, light	cwt.	2	15	0	to	3	0	0
Sulphate (Epsom salts commercial)	ton	11	0	0	to	11	10	0
Sulphate (Druggists')	ton	17	10	0	to	18	0	0
Methyl acetone	ton	89	0	0	to	90	0	0
Alcohol, 1% acetone	gall.	0	11	6	to	0	12	0
Potassium bichromate	lb.	0	1	6	to	0	1	7
Carbonate, 90%	ton	102	0	0	to	105	0	0
Potassium Chlorate	lb.	0	1	2	to	0	1	3
Meta-bisulphate, 50-52%	ton	235	0	0	to	245	0	0
Nitrate, refined	ton	60	0	0	to	62	0	0
Permanganate	lb.	0	3	3	to	0	3	6
Prussiate, red	lb.	0	6	0	to	0	6	3
Prussiate, yellow	lb.	0	1	10	to	0	2	0
Sulphate 90%	ton	31	0	0	to	33	0	0
Salammoniac, firsts	cwt.	4	0	0	to		—	
Seconds	cwt.	3	15	0	to		—	
Sodium acetate	ton	48	0	0	to	50	0	0
Arsenate, 45%	ton	50	0	0	to	52	0	0
Bicarbonate	ton	9	0	0	to	9	10	0
Bisulphate, 60-62%	ton	32	10	0	to	33	10	0
Chlorate	lb.	0	0	6½	to	0	0	7
Caustic, 70 %	ton	25	10	0	to	26	10	0
Caustic, 76 %	ton	26	0	0	to	26	10	0
Hyposulphite, commercial	ton	19	10	0	to	20	0	0
Nitrite, 96-98%	ton	60	0	0	to	62	0	0
Phosphate, crystal	ton	32	0	0	to	35	0	0
Prussiate	lb.	0	1	0½	to	0	1	1
Sulphide, crystals	ton	16	0	0	to	16	10	0
Sulphide, solid, 60-62%	ton	22	10	0	to	23	10	0
Sulphite, cryst.	ton	11	10	0	to	12	0	0
Strontium carbonate	ton	85	0	0	to	90	0	0
Sulphate, white	ton	8	10	0	to	10	0	0
Sulphur chloride	ton	38	0	0	to	40	0	0
Tin perchloride, 33%	lb.	0	2	4	to	0	2	5
Protochloride (tin crystals)	lb.	0	1	9	to	0	1	10
Zinc chloride, 102 Tw.	ton	22	0	0	to	23	10	0
Chloride, solid, 96-98%	ton	50	0	0	to	52	10	0
Sulphate	ton	21	10	0	to	23	0	0
Oxide, Redseal	ton	75	0	0	to	80	0	0

Coal Tar Intermediates, &c.

	per	£	s.	d.		£	s.	d.
Alphanaphthol, crude	lb.	0	3	0	to	0	3	6
Alphanaphthol, refined	lb.	0	3	6	to	0	3	9
Alphanaphthylamine	lb.	0	2	7	to	0	2	9
Aniline oil, drums free	lb.	0	1	3	to	0	1	4
Aniline salts	lb.	0	1	8	to	0	2	0
Anthracene, 85-90%	lb.	0	1	5	to	0	1	6
Benzaldehyde (free of chlorine)	lb.	0	6	6	to	0	7	0
Benzidine, base	lb.	0	6	6	to	0	7	0
Benzidine, sulphate	lb.	0	5	6	to	0	6	0
Benzoic, acid	lb.	0	5	0	to	0	5	3
Benzoate of soda	lb.	0	5	0	to	0	5	3
Benzyl chloride, technical	lb.	0	2	0	to	0	2	3
Betanaphthol benzoate	lb.	1	6	0	to	1	7	6
Betanaphthol	lb.	0	2	9	to	0	3	0
Betanaphthylamine, technical	lb.	0	6	6	to	0	7	0
Croceine Acid, 100% basis	lb.	0	4	9	to	0	5	0
Dichlorbenzol	lb.	0	0	5	to	0	0	6
Diethylaniline	lb.	0	7	0	to	0	7	6
Dinitrobenzol	lb.	0	1	2	to	0	1	3
Dinitrochlorbenzol	lb.	0	1	2	to	0	1	3
Dinitronaphthaline	lb.	0	1	4	to	0	1	6
Dinitrotoluol	lb.	0	1	7	to	0	1	8
Dinitrophenol	lb.	0	1	3	to	0	1	6
Dimethylaniline	lb.	0	3	0	to	0	3	3
Diphenylamine	lb.	0	3	0	to	0	3	3
H-Acid	lb.	0	11	6	to	0	12	0
Metaphenylenediamine	lb.	0	4	9	to	0	5	0
Monochlorbenzol	lb.	0	0	9	to	0	0	10
Metanilic Acid	lb.	0	7	6	to	0	8	6
Monosulphonic Acid (2 :7)	lb.	0	7	0	to	0	8	0

	per	£	s.	d.		£	s.	d.
Naphthionic acid, crude	lb.	0	3	3	to	0	3	6
Naphthionate of Soda	lb.	0	4	0	to	0	4	6
Naphthylamin-di-sulphonic-acid	lb.	0	4	6	to	0	5	0
Nitronaphthaline	lb.	0	1	2	to	0	1	3
Nitrotoluol	lb.	0	1	3	to	0	1	6
Orthoamidophenol, base	lb.	0	18	0	to	1	0	0
Orthodichlorbenzol	lb.	0	1	1	to	0	1	3
Orthotoluidine	lb.	0	2	2	to	0	2	3
Orthonitrotoluol	lb.	0	1	6	to	0	1	9
Para-amidophenol, base	lb.	0	14	0	to	0	15	0
Para-amidophenol, hydrochlor	lb.	0	15	6	to	0	16	0
Paradichlorbenzol	lb.	0	0	4	to	0	0	5
Paranitraniline	lb.	0	4	0	to	0	4	6
Paranitrophenol	lb.	0	1	10	to	0	2	0
Paranitrotoluol	lb.	0	5	3	to	0	5	6
Paraphenylenediamine, distilled	lb.	0	12	0	to	0	13	0
Paratoluidine	lb.	0	7	0	to	0	7	6
Phthalic anhydride	lb.	0	9	0	to	0	10	0
R. Salt, 100% basis	lb.	0	4	0	to	0	4	2
Resorcin, technical	lb.	0	11	0	to	0	12	0
Resorcin, pure	lb.	0	17	6	to	1	0	0
Salicylic acid	lb.	0	2	9	to	0	3	9
Salol	lb.	0	4	9	to	0	5	6
Shaeffer acid, 100% basis	lb.	0	3	6	to	0	3	0
Sulphanilic acid, crude	lb.	0	1	3	to	0	1	0
Tolidine, base	lb.	0	9	0	to	0	10	0
Tolidine, mixture	lb.	0	2	9	to	0	3	0

Supplies of Quinine Sulphate

In the House of Commons on Thursday, November 20, Mr. Hurd asked the President of the Board of Trade if he would state why the Report of the Committee on Prices and Supplies of Quinine Sulphate had not been published as promised, and what was the cause of the delay.

Sir Auckland Geddes: I regret that it has not yet been possible to publish the findings of the Committee appointed to investigate the prices and supplies of quinine sulphate; the delay has been occasioned by the necessity of considering certain legal questions connected with the publication of the report.

British Dyestuffs Corporation

In the House of Commons on Thursday, November 20, Major Barnes asked the President of the Board of Trade if he would state what were the terms of the agreement of May 16, 1919, made between the President of the Board of Trade and the trustee of the British Dyestuffs Corporation; what were the amounts of the advances made and to be made under that agreement; and what was the form of the security taken by the Government.

Sir Auckland Geddes: The agreement to which my hon. and gallant friend refers provided for the formation of the British Dyestuffs Corporation, Limited, and for the advance to that company (subject to certain conditions) of the sum of £530,425, being the outstanding part of a total sum of £1,700,000 which his Majesty's Government had undertaken to advance to British Dyes Limited, in which the new company was acquiring a controlling interest. The agreement also imposed conditions as to the articles of association of the British Dyestuffs Corporation, Limited, British Dyes Limited, and Levinstein Limited, so as to secure permanent British control of the three companies, and to give the Board of Trade supervision over the prices charged for, and the distribution of, the companies' products. The restriction previously imposed upon the rate of dividend payable on the share capital of British Dyes Limited was removed. The Government advances were secured by Debentures issued by the three companies. The arrangement was subsequently modified, the Government advance, made with the intention of fostering the British dye industry, taking the form of a subscription for 850,000 £1 Preference shares and 850,000 £1 Preferred Ordinary shares in British Dyestuffs Corporation, Limited.

Recent Wills

	£
Mr. W. G. Smith, of Beckenham, chemical merchant (of the firm of R. W. Greeff & Co.)	10,825
Mr. A. J. Brown, of Northfield, Birmingham, since 1899 Professor of Brewing at Birmingham University and chemist to Messrs. Thomas Salt & Co., Burton-on-Trent	4,050
Mr. Franklin Dixon, of Mariquita, Maindee, Newport, Mon., retired chemist (net personalty £8,553)	10,594
Mr. G. Wilson, chemist, of Coldstream	2,596
Mr. Walter Henry Dixon, East Grinstead, chemist and druggist, a director of W. E. Dixon & Sons, dispensing, analytical, and wholesale chemists, East Grinstead, and Hayward's Heath	30,040

Company News

BENGAL IRON AND STEEL.—At an extraordinary general meeting held in London on Tuesday, Mr. W. T. Machellan, presiding, said that the re-organisation proposed would put the company in possession of about half-a-million sterling of free capital for extensions. There would be an issue of 7½ per cent. Preference shares early in December. The dividend on the Ordinary shares for the year ended September 30 would be paid. The purchase consideration was £1,665,750, of which £204,000 was payable in cash, and would be applied in paying off the debenture stock, while £1,311,750 would be satisfied by the issue of fully paid Ordinary shares of the new company at par, and the balance of £150,000 is to be payable either in cash or by the issue of 130,000 fully paid Preference shares. The 1,311,750 Ordinary shares were to be distributed among the holders of Ordinary shares in the proportion of five new shares for each old share. Each Ordinary share holder would be entitled to subscribe at par for the Ordinary share in the new company for each Ordinary share, which he held in the old company. Preference shareholders in the old company would be entitled to have repayment of their capital at par either in cash or by an allotment of 10 fully paid 7½ per cent Preference shares of £1 each in the new company for every 6 per cent. Preference share of £10 in the old company. The £80,016 to be distributed as capital among the Ordinary shareholders was at the rate of 6s. 1 1.5d. for each £1 share held. The proposal was sanctioned.

BORAX CONSOLIDATED.—Interim dividend of 1s, per share, less tax, on the Deferred Ordinary shares in respect of the year ended September 30. Coupon No. 23 will be paid on November 27 at the offices of the company, 16, Eastcheap, E.C.

BROKEN HILL PROPRIETARY.—Dividnd (No. 187) of 9d. per share payable on November 19.

BRUNNER, MOND & CO.—The directors announce an interim dividend for the six months ended September 30 at the rate of 10 per cent. per annum, less tax, payable to shareholders on the register on November 4. Warrants will be posted on December 19. The dividend is the same as that for the corresponding period last year.

CALIFORNIA PETROLEUM CORPORATION.—The report for 1918 shows a net profit of $1,321,582, an increase of $43,085.

CERNELIA NITRATE.—After payment of the Preference dividend for the year to June 30 last, the directors propose a dividend on the Ordinary shares of 2 per cent., carrying forward £388. The falling off in the profits is due to the fact that with the signing of the Armistice the Government orders for nitrate ceased suddenly, and producers were from November to May prevented from finding a market for the large stocks they had on hand.

CHLORIDE ELECTRICAL STORAGE.—Interim dividend of 5 per cent. actual, tax free on Ordinary. Same as last year.

CLYDE COLD STORAGE.—Clyde Cold Storage Co., Ltd., having a capital of £200,000, equally divided into Ordinary and 6½ per cent. Participating Cumulative Preference shares of £1 each, announces the issue at par of the whole of the Preference and 36,000 of the Ordinary shares. The Preference shares are entitled to a fixed cumulative preferential dividend of 6½ per cent. per annum, with the right to participate out of the net profits of each year to the extent of an additional 1 per cent. for every 1 per cent. paid on the Ordinary shares above 8 per cent;

EBBW VALE STEEL, IRON AND COAL.—Interim dividend at the rate of 7 per cent. per annum on the Preference shares for the half-year to September 30, less tax.

ELECTRO BLEACH AND BY-PRODUCTS.—The directors have declared an interim dividend on the Ordinary shares of the company in respect of the half-year ended June 30, 1919, of 7½d. per share (less income tax at 6s. in the £), being at the rate of 12½ per cent. per annum, such dividend being payable on December 1 to the registered holders of the Ordinary shares on November 14. Proposals have been issued by the directors to increase the capital from £180,000 to £480,000, divided into 320,000 Preference shares of £1 each and 320,000 Ordinary shares of 10s. each, and to issue 80,000 Preference and 80,000 Ordinary shares, also to redeem the whole of the outstanding debentures.

ERINOID, LTD.—At the fourth annual general meeting, held in London last week, a dividend of 15 per cent., less tax, was declared.

F.M.S. (MALAY STATES) RUBBER PLANTATIONS.—The profit for the year to June 30 was £5,671, brought forward £4,351, making £10,022: dividend of 7½ per cent., against 12½ per cent. for the preceding year; forward (subject to bonus to staff, &c.), £3,647.

HARRISONS & CROSFIELD.—The report for the year ended June 30 states that the market value of the investments continues to show a large appreciation over their cost. The available profit after payment of dividends for 12 months on the Preference and Preferred Ordinary shares and interim dividends on the Deferred Ordinary and Management shares, and including £37,530 brought forward was £115,701. To general reserve, £14,024, against £27,500; to reserve for income-tax, £15,000, against £40,000; to staff special reserve, £3,000, against £6,500; bonus to staff, £9,000, against nil. The payment of a final dividend on the Deferred Ordinary shares and Management shares will absorb £79,554, leaving £36,148 to be carried forward.

LANGDALE'S CHEMICAL MANURES.—At the annual meeting, held in Newcastle, Mr. W. B. Van Haansbergen said that the Board had installed suitable plant for de-arsenating, which was working satisfactorily. A dividend of 5 per cent., free of income tax, was declared for the present year; and a final dividend of 2s. per share, free of tax, for the year 1918.

LONDON NITRATE.—The directors recommend a dividend for the year to June 30, of 1s. per share, less tax.

MAYPOLE DAIRY.—At an extraordinary general meeting, held on Monday in London, a resolution to capitalise £308,333, part of the amount standing to the credit of the company's reserve funds, and that the same be capitalised and set free accordingly for distribution among the members in accordance with their rights, free of income-tax, and that the same be not paid in cash, but be applied in paying up Deferred Ordinary shares of the company to the nominal amount of £308,333, and that the directors be authorised and directed to distribute the shares so fully paid up, in the proportion of one for every three Deferred Ordinary shares now held by the members, was carried unanimously.

MINERALS SEPARATION.—At an extraordinary general meeting, held in London last week, the chairman referred to two important discoveries, the details of which he hoped to be able to give at an early date. Both the discoveries have been patented. A resolution to increase the capital of the company to £500,000, by the creation of 450,000 share of £1 each, and sanctioning an immediate first issue to the shareholders of 50,000 shares at a premium of £1 per share *pro rata* to their holdings, was passed.

MIRIS STEEL.—Interim dividend of 2s. per share, free of tax, on Ordinary for half-year, payable October 28.

NEW LAFON TIN MINES.—Transfer books will be closed November 21, for the payment of a dividend.

PAN AMERICAN PETROLEUM AND TRANSPORT.—The net profit of the company and its subsidiaries for the year to December 31 last was $4,666,727.

PREMIER BRIQUETTE.—The Premier Briquette Co., Ltd., which has been formed with a capital of £125,000, divided into 120,000 Preferred Ordinary shares of £1 each and 100,000 Ordinary shares of 1s. each, is offering for subscription at par 100,000 Preferred Ordinary shares.

SAN LORENZO NITRATE.—The directors have decided not to pay an interim dividend for the half-year ended June 30. A year ago 2s. per share was paid.

"SANITAS" COMPANY.—Interim dividend at the rate of 9 per cent. per annum on the Preference shares of the company, payable after December 1 next.

SANTA CATALINA NITRATE.—The report for the year to June 30 last, states that the gross profit for the year is £23,306. Deducting London expenses, £2,239, income-tax, £1,391, and depreciation of investments, £690, and adding £2,741 brought in, the total is £21,727. An interim dividend of 5 per cent. was paid in June last, and the directors propose a final dividend of 15 per cent., making 20 per cent. for the year, write off £1,675 for depreciation of grounds, and £1,675 for depreciation of plant and machinery, carrying forward £2,577.

THE ALLIANCE FILM CORPORATION (LTD.).—Application for 500,000 (10 per cent. Participating) Preferred Ordinary shares is invited. The company, formed to establish on a large scale and to carry on in Great Britain, the business of motion picture production, has a capital of £1,000,000 divided into 995,000 Preferred Ordinary shares of £1 each, and 100,000 Deferred Ordinary shares of 1s. each.

UNITED BRITISH OILFIELDS OF TRINIDAD.—The report to December 31 last states that the working profit for the year, depreciation excluded, has increased by £32,000, resulting in a reduction of the deficiency by £23,000. It has not, however, been possible to reduce the loan to any appreciable extent. A further amount of £5,254 has been written off against abandoned and unproductive wells, and again £10,000 has been appropriated on account of depreciation of other assets.

UNION COLD STORAGE.—At the twenty-second ordinary general meeting held in London last week, Mr. R. P. Sing (chairman), presiding, said that in 1916, owing to the difficulty of getting transport for refrigerated cargo, the directors secured the control of four steamers of large refrigerated capacity then in course of construction. Three of these vessels had been in operation for some time, and the fourth had just been delivered by the builders. They had now decided that it was important for the permanent interests of the Union Cold Storage Co. for them to acquire the whole of the fleet of the Blue Star Line (Ltd.), consisting of 15 refrigerated steamers, forming one of the largest fleets of its kind in existence. The deadweight capacity exceeded 120,000 tons, and the greater portion of this was represented by new steamers. The negotiations were practically complete, and to provide the necessary funds to carry out this transaction, the directors proposed to issue further capital, and the notices of the usual meetings for the necessary formalities would shortly be issued.

WEARDALE STEEL, COAL AND COKE.—Net profit for year to September 30, £200,667, and £39,708 was brought in, making £240,375. Further dividends of 6 per cent. on the Preferred and 13 1-3 per cent. on the Deferred shares, making the usual distributions of 12 per cent. and 19 1-3 per cent. respectively for the year; transferring £80,000 to reserve (increasing it to £240,000); carrying forward £45,203.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

LONDON GAZETTE.

Bankruptcy Information

THE COLNBROOK CHEMICAL AND EXPLOSIVES CO., LTD., 8, Victoria Street, Westminster, London. First meeting creditors, November 25, 11.30 a.m. Bankruptcy Buildings, Carey Street, Lincoln's Inn, London, W.C. Contributories, November 25, 12.30 p.m., 33, Carey Street, Lincoln's Inn, London, W.C.

Notice of Intended Dividends

THE PETROL PROCESS SYNDICATE, LTD., 3, Copthall Buildings, London, December 2. H. E. Burgess, Official Receiver and Liquidator, 33, Carey Street, Lincoln's Inn, London, W.C.

THE BRITISH SALICYLATES, LTD., 90, and 92, Banner Street, Golden Lane, London, December 2. Harold de Vaux Brougham, Senior Official Receiver and Liquidator, 33, Carey Street, Lincoln's Inn, London, W.C.

Liquidators' Notices

HASLAND COKING CO., LTD. (winding up voluntarily for reconstruction purposes). Meeting of creditors at the registered office of the company, Grassmoor Collieries, near Chesterfield, on Tuesday, December 2, at 11 a.m. I. H. Saxton, Liquidator.

FERSAN ISLANDS OIL CO., LTD. (in voluntary liquidation).—General meeting of members will be held at 19, Basinghall Street, London, E.C.2, on Friday, December 19, at 12 noon. John Barber, Liquidator.

Company Winding up Voluntarily

SUPER VAPOR SYNDICATE LTD.—Mr. Rowland Evans Smith, F.C.A., Chartered Accountant, 79, Mark Lane, London, E.C.3, appointed Liquidator.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, created after July 1st, 1908, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges which would, if created after July 1, 1908, require registration. The following Mortgages and Charges have been so registered. In each case the total debt, as specified, in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced since such date.*]

ELSTREE CHEMICAL WORKS, LTD.—Registered November 11, £1,000 debentures, balance of £15,000; general charge.

Satisfactions

IRTHLINGBOROUGH GAS & COKE CO., LTD.—Satisfaction registered November 5, £1,400, registered July 11, 1905.

NEUCHATEL ASPHALTE CO., LTD., LONDON, S.W.—Satisfaction registered November 12, £54,800, amount outstanding July 1, 1908.

TYLERYBONT LIME & LIMESTONE CO., LTD., BRECON.—Satisfaction registered November 8, £1,000, registered September 27, 1909, January 4, 1913, and May 24, 1913.

UNITED LIMMER & VORWOHLE ROCK ASPHALTE CO., LTD., LONDON, E.C.—Satisfaction registered November 10, £3,000, registered October 31, 1918.

County Court Judgments

[*NOTE.—The publication of extracts from the "Registry of County Court judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

BELL, J. ROWELL, 190, Ravensworth Road, Dunston-on-Tyne.—Chemist, £14 12s. 8d. October 15.

BROOKS, THOMAS H., 128, Nightingale Road, Hitchin.—Druggist. £12 13s. 8d. October 10.

New Companies Registered

The following list has been prepared for us by Jordan & Sons, Ltd., company registration agents, 116 and 117, Chancery Lane, London W.C.:—

BRASS FOUNDERS (SHEFFIELD), LTD., Princess Works, Rockingham Street, Sheffield.—Founders in brass, nickel, aluminium and lead. Directors: O. F. Buxton, 33, Coupe Road., Sheffield; J. W. Naylor, 17, Bank Street, Sheffield. Qualification of Directors, 1 share.

BUCKLEY JUNCTION METALLIC BRICK, CO., LTD.—Manufacturers of ceramic ware. Nominal capital, £10,000 in 1,000 shares of £10 each. Directors: W. J. Wig, The Firs, Chester; C. A. Earle, Heywood Lodge, Chester; E. P. Jones, Somerooell, Seacombe. Qualification of Directors, £100.

DAWSONS (CHEMISTS), LTD.—Chemists, photographic manufacturers and opticians, &c. Nominal capital £2,000 in 1,000 Preference shares and 1,000 Ordinary shares of £1 each. Directors: F. Sleight, 1, West Mall, Clifton, Bristol; A. A. Dawson, 257, High Street, Ponders End., N. Qualification of Directors, £200.

GOLDSMITH BROTHERS (LIVERPOOL), LTD.—Drysalters, chemists, &c. Nominal capital, £5,000 in 5,000 shares of £1 each. Directors: H. Sapiro, 8, Hartington Road, Liverpool; I. Goldsmith, 100, Edge Lane, Liverpool. Qualification and remuneration of Directors to be voted by company in general meeting.

HAFOD MANUFACTURING CO., LTD.—Manufacturers and dealers in iron, steel, tin, terne, and black plates. Directors: G. H. Mills, 2, St. James' Gardens, Swansea; C. H. Mills, Callencroft, Mumbles; H. R. Morgan, Brynymor Villa, Swansea; E. W. Pickwick, Kennymore, Mumbles; B. Winship, 19, Grosvenor Road, Skelty. Qualification of Directors, £500. Nominal capital, £50,000 in 50,000 shares of £1.

HERTS BENZOL CO., LTD., Two Waters Mill, Hemel Hempstead, Herts.—Manufacturers of crude and refined benzol tractor fuel oil or other oils. Nominal capital, £15,000 in 15,000 shares of £1 each. Directors to be appointed. Qualification of Directors, 100 shares. Remuneration of Directors, £1,000.

KINGSTON PURE ICE AND COLD STORAGE CO., LTD., 34, Clarence Street, Kingston-on-Thames.—Ice manufacturers, cold storage and warehousemen. Nominal capital, £75,000 in 15,000 Preference shares and 60,000 Ordinary shares of £1 each. Minimum subscription, 7 shares. Directors: W. Stevens, 6, Eden Street, Kingston-on-Thames, Chairman; Edward Carter, A.R.I.B.A., 86, Eden Street, Kingston-on-Thames; Edward Carter, Twickenham; H. J. Adams, 45, Fassett Road, Kingston-on-Thames; P. Smith, S.C.C., "Ashwood," Melrose Road, Merton Park, S.W. 19. Qualification of Directors, 300. Remuneration of Directors, £50 each. Chairman £100.

LAWRENCE ORMEROD & SON, LTD., Vale Mill, Oak Street, Shawforth, Lancaster.—To acquire and carry on the business of picker manufacturers and tanners. Nominal capital, £12,000 in 12,000 shares of £1 each. Directors: L. Ormerod, 1, Oak Street, Shawforth, Lancashire; G. Ormerod, 1, Oak Street, Shawforth, Lancashire; F. Ashworth, 3, Eagley Bank, Shawforth. Qualification of Directors, £500.

MARINE AND MECHANICAL ELECTRIC WELDING CO., LTD.—3, Lloyd's Avenue, Fenchurch Street, E.C. 3.—Electric-arc and oxy-acetylene cutting and welding of metal and alloys. Nominal capital, £10,000 in 10,000 shares of £1 each. Directors: J. McAuslan Gilchrist, Aytoun, Sydenham Road, Dowanhill, Glasgow; T. Ballatine, 34, Queen's Gate, Dowanhill, Glasgow; W Woodward, 6, Palmerston Road, East Sheen, S.W.; W. Pollock, 3, Lloyd's Avenue, E.C. 3. Qualification of Directors, £100.

MOORE OF TRAFFORD PARK, LTD.—Manufacturers and wholesale and retail dealers in dyes, dyestuffs, chemicals, &c. Nominal capital, £50,000 in 50,000 shares of £1 each. Directors: T. A. Cocker, 7, Woodlands Way, Middleton; C. Pickstone, Chapelfield, Radcliffe; E. Pickstone, Chapelfield, Radcliffe; A. Walkden, Porto Novo, Prestwich, near Manchester; S. Moore; and W. T. McIvor, 311, Cleveland Street, Birkenhead. Qualification of Directors, £1,000. S. Moore 4,000 shares.

NORMANBY ESTATE CO., LTD., Crosby, Scunthorpe, Lincolnshire.—Ironstone and limestone miners and merchants. Nominal capital, £650,000 in 650,000 shares of £1 each Directors: Sir B G. D. Sheffield, Bart., Normanby Park, Doncaster; Lord A. H. Grosvenor, Broxton, Lower Hall, Handley, Cheshire; Sir S. E. Scott, Bart., M.P., 78, Mount Street, W.; H. G. Atkinson-Clark, Estate Offices, Crosby, Scunthorpe, Lincs.

PLATINUM AND MINERAL ESTATES (COLOMBIA), LTD., 17, Victoria Street, S.W. 1.—To prospect for work and develop gold, platinum, lead, tin, wolfram, silver, copper, coal, iron, and other mines, mineral oil, and other rights. Nominal capital, £25,000 in 20,000 Preference Ordinary shares of £1 and 100,000 Deferred Ordinary shares of 1s. each. Minimum subscription, £7. Directors: H. March, "Frazenda," Osmond Gardens, Hove; J. Hegan-McGarry, 8, Kensington Gardens Square, W.; M. A.

Reninson, 72, Shoe Lane, E.C.; E. Cousins, "Durnside," Clacton-on-Sea. Qualification of Directors, 200 Preference shares.

TALMET DENTAL AND GENERAL MANUFACTURING CO., LTD., 566, Old Kent Road., S.E. 1.—Manufacturers of pharmaceutical products. Nominal capital, £500 in 10,000 Founders' shares of 1s. each. Directors: E. M. Neville, 60, Castletown Road, W. 14. Qualification of Directors, £25.

The Affairs of A. R. Harvey

THE public examination of Alfred Robert Harvey, 8, Waterloo Place, Regent Street, S.W., was held on Friday, November 14, at the London Bankruptcy Court before Mr. Registrar Francke. The statement of affairs showed liabilities £34,281, of which £5,540 were expected to rank and an estimated surplus in assets of £152,997. The debtor had been interested in a company called Flax, Limited, which was formed to buy three secret processes relating to the transformation of kerosene into petrol. Part of the purchase price was 60,000 fully paid shares of £1 each in a new company to be formed and called Oil Processes, Ltd., which was constituted in Canada with a nominal capital of £1,400,000, and the debtor was appointed managing director and president of both companies. Mr. Garton attended as Official Receiver and upon examination by him the debtor stated that he formed Flax, Ltd., in March, 1912, with a nominal capital of £200,000 which was afterwards increased to £1,000,000. He was allotted 9,000 shares of £20 each in the company in consideration of his transferring to it certain rights relating to the disposal of patents covering the McAdam Fibre Machine, which were to be exploited by a new company. This company was, however, never formed, with the result that Flax, Ltd., derived no benefit from the transaction. In December, 1913, Flax, Ltd., agreed to buy the secret processes mentioned. Of the nominal capital of Oil Processes, Ltd., Flax, Ltd., was to receive £850,000 in fully paid shares and £50,000 in cash as consideration for the sale of two of the secret processes, whilst the remaining share capital was to be allotted to Flax, Ltd., which was to pay in full therefor within two years to Oil Processes. The debtor was appointed managing director and president at salaries which aggregated £23,000 per annum, and he acted in these capacities until both companies went into compulsory liquidation. His present position was due to the stoppage of his income consisting of salary and dividends, owing to the war. The examination was concluded.

Manufacturers' Chemist and a Carman's Notice

IN the Bow County Court, on Wednesday, before Judge Graham, Henry Wood, of 8, Ruston Street, Bow, a carman, sued Messrs. Thomas Hill Jones, Ltd., of Invicta Works, Bow Common Lane, E., manufacturers' chemists, to recover £2 15s., a week's wages, in lieu of notice. Counsel said that the plaintiff was a trade unionist, and he had been instructed by the National Union of Vehicle Workers. On May 17 he was discharged at an hour's notice. He also received a packet in which was a week's money, and on it was written, "We shall not require your services after to-day owing to slackness. Enclosed is one week's money in lieu of a holiday to which you are entitled." Counsel said that the plaintiff claimed to be entitled to a week's notice money as well as the holiday. Mr. Robinson (for the defence) produced a document signed by the plaintiff in 1911, which read as follows: "I hereby agree that I am a daily servant, and subject to dismissal at an hour's notice, notwithstanding that wages are paid for convenience weekly." Judgment was given for the defendants with costs.

The Affairs of H. Swithenbank

AT the Law Courts, West Bromwich, on November 11, Harold Swithenbank, analytical chemist, 132, Beeches Road, West Bromwich, applied for his discharge from bankruptcy. The debtor was adjudged a bankrupt in 1917, the deficiency being £880 16s. 1d. During his bankruptcy he had paid £137 10s. off the deficiency, in accordance with his offer to pay £75 per year, but this ceased in March last. The Official Receiver pointed out that debtor had attributed his failure to his own extravagance. The debtor, said Mr. Williams, was a married man with a family of six, five of whom were living at home. The increase in the cost of living made it impossible for him to pay his way. The Official Receiver thought the offer was totally inadequate. His Honour said it was obvious that throughout his life debtor had been spending other people's money with a reckless disregard to consequences. He had borrowed money off his best friends, one of whom had lent him £500. Under these circumstances he felt it his duty to refuse the discharge, which he accordingly did.

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